THE BUILDER

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THE COMPLETE ARCHITECT.

WITH a sort of Malthusian relentlessness the extent of our knowledge increases while the span of our lives remains constant. If no novelist of imagination has visualised a future in which we are obliged to spend some fifty or sixty years receiving education that we may, during the remaining ten or twenty, put forth our declining strength in an attempt to achieve something useful—for not until then shall we even be moderately proficient for our "life's work"—Mr. Simpson* has at least suggestively hinted at this possibility. And this rapid advance of knowledge affects the architect more than any other class, for the ramifications of his profession extend to every department of life. There can be no scientific invention, discovery, or achievement; no new art movement or school; no new organisation of society; no new religious sect—but whose reverberation must, in a greater or lesser degree, reach him. Mr. Simpson may well select a few random examples of those who gained early proficiency in their profession, but did such proficiency necessitate an acquaintance with the unending plethora of diverse knowledge which towers above the architectural tyro of to-day—a strain, it must be added, for the most robust cerebral digestion? What had the architects of a hundred and fifty years ago to know of electrical and illuminating engineering; of picture gallery lighting, and acoustics; of central heating in all its branches, and lift designing; of modern hospital equipment and laboratory fittings; of modern factory construction, and moving loads; of aeroplane hangars and strong-rooms? For every material with which he had to deal we have fifty varieties and alternatives; for every art movement we have a dozen (ephemeral perhaps, but however much we may despise or deplore we cannot ignore); and for every type of building then known we now have a score. The next new development to require the architects' attention will be that of broadcasting; cabinet-makers are already designing special furniture for the accommodation of sets; we visualise the future and see each house of moderate size with its broadcasting room designed for maximum efficiency, both acoustically and electrically, and with a beauty arising from its own fitness to purpose. We go farther and see the aerial woven integrally into the design of the house. No wonder, therefore, that the subject of the architect's education is one about which opinions differ, except in a conviction that the perfect scheme has yet to be evolved.

Towards the evolution of such a scheme Mr. Simpson has a suggestion with which those who have had the pleasure of listening to his discourses will know. It is for an art school in which all who contemplate the dedication of their lives to their art should foregather, for have not all the arts—at any rate, all the plastic arts—a common basis? "Since the three sister arts demand in all essential respects the same attainment of manual skill and appreciation of beauty, joined with the poetic and creative temperament, a common initial training is surely indicated for all three." Never has this attractive theory been stated with more lucidity and charm than in the essay "Consilio Manuque" which closes this book. Mr. Simpson himself so markedly possesses that breadth of outlook, that sympathy for and comprehension of the other arts, indeed of the whole range of humanities, that he impresses us with the advantages of such a system. And this book shows that even when he lays aside his pencil and takes up his pen art does not suffer, for what he writes is literature just as what he builds is architecture; or, since Mr. Simpson elsewhere insists that all building is architecture, good literature and good architecture. But when, under such a system, will the architect be ready to stand alone and begin his life's work? He will see his comrades, the sculptor and painter, make a tentative beginning, if they are not deserted by that fickle jade inspiration, while he, having likewise grasped the principles of design, must yet devote further years to the assimilation of hard facts and to the acquirement of knowledge. What does a painter need to know compared with the hard knowledge of how to wipe a joint, to lay a brick, or to distinguish the natural bed of a stone? Yet no architect, however proficient in design, could conscientiously serve his client if he did not know these and a thousand similar matters. Therefore, we are not surprised to find Mr. Simpson commenting in an address to the officers of the School of Military Engineering, Chatham, on the Architectural Principles in Engineering, on the inadequacy of the Psalmist's "three score years and ten." Clearly architects require an extension. But the particularly interesting point for our argument in this paper is that it indicates clearly how both architecture and engineering, too, spring from a common stock. Logically, then, might not the architect as well begin his studies alongside the engineer as alongside the painter and sculptor: "the principles of architecture are identical with those of engineering, of all well-planned, honest building." Is not the architect's prime concern equally with the physical laws of stability and the various natural reactions both physical and chemical of masses and materials as with those principles of design which are common to the plastic arts?

These two essays, indeed, seem to epitomise the line of cleavage between the two main ideas of architectural education. There are those who would concentrate on the artistic aspect of the architect's work, not, it is true, by any means ignoring the other, but not making it fundamental, and there are those others who would concentrate on the practical. First, let the student become familiar with the limitations of his materials, with their properties, their growth, their defects, and the methods of their conversion; let him see the processes and even himself learn to handle tools; from this knowledge a beauty will arise from their proper use which no mere academic training can provide. The perfect standpoint, no doubt, is one which visualises these two aspects. It is rare, but it is one which Mr. Simpson, in common with all our great architects, possesses. And the affinity which he postulates between good architecture and good engineering has recently received renewed confirmation in his own work, for in the designs for the buildings, particularly the Stadium, at the British Empire Exhibition, Wembley, we see how allied they are.

Following the argument to its logical conclusion, it would seem that the engineer, architect, painter and sculptor must all start from a common school, otherwise the architect, by allying himself with either, receives a bias which may prove ultimately detrimental. But as such a coalition of interests is unlikely—if not impracticable—the alternative is that the architect retains his own school, receiving his instruction from the broadest basis; learning early of his brotherhood with engineers and artists, and keeping closely in touch with his brethren, making their problems and difficulties his problems and difficulties, and remembering that if they had far to go he has farther, for upon him "all the ends of the world have come."

* Essays and Memorials. By John W. Simpson, P.P.R.I.B.A. (London: 27, Tothill-street. Price 12s. 6d. net.)

NOTES.

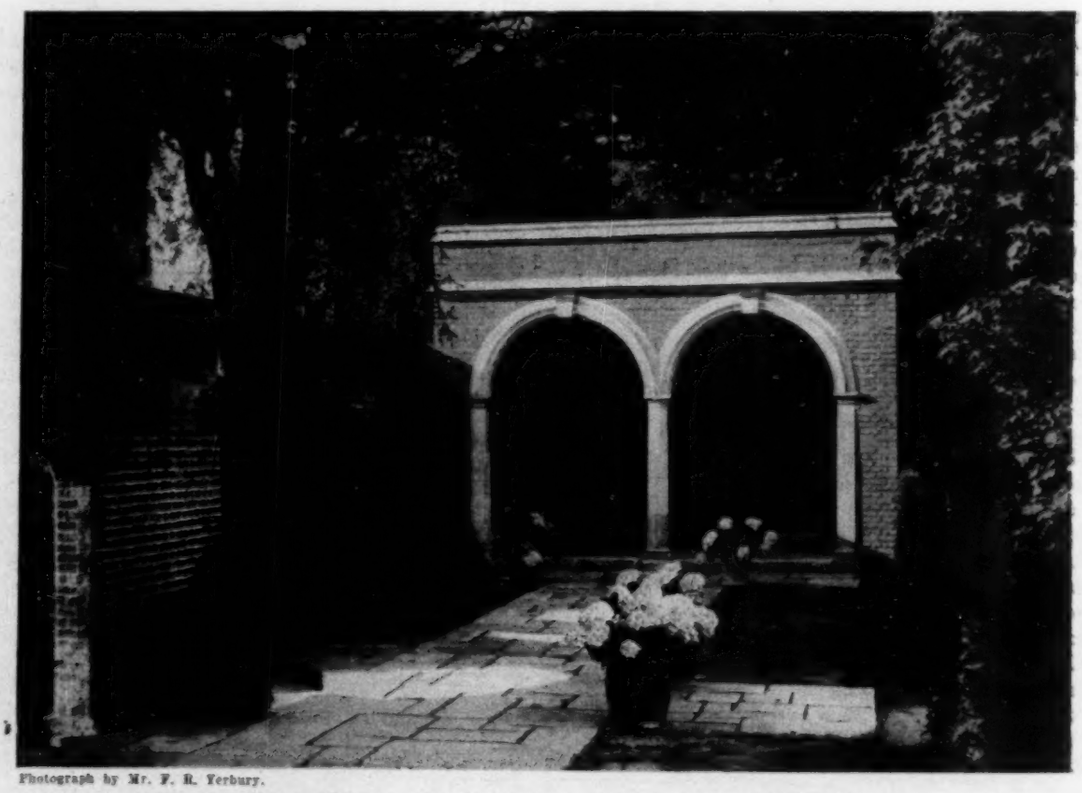
Building Trade Wages. In spite of its drastic changes from the terms first put forward by the employers for a reduction of building trade wages and an alteration in the working week, the operatives have, by a majority of over three to one, refused to accept the new proposal for a reduction of 10 per cent. in wages without any alteration in working hours. In view of the published statement of the operatives' leaders that they would be prepared to negotiate on wages providing the question of the longer working week were dropped, the result of the ballot is certainly surprising, but it is unthinkable, and, we believe, against the wishes of both parties, that there should be a stoppage at this juncture, at a time when the public are regaining confidence in building as an investment, when there is every sign of a revival of building, and when a new housing scheme is on the verge of being launched. We hope, and confidently believe, that neither employers nor workers will precipitate a position which they do not desire.

The Negotiations. We must all hope that the threatened strike may be averted and that if the employers and operatives are unable to reach agreement, the Ministry of Labour may intervene. Owing to the secret methods adopted in the negotiations between the parties it is difficult to arrive at a just appreciation of all the facts and issues involved, and we cannot help thinking that the negotiations might have had a happier result ere this had they been carried on with less secrecy and with a little more trust in free and unfettered opinion; but on the facts presented, we have no doubt that the prosperity of the industry, which includes the maximum employment of the operatives, necessitates a reduction in wages below that provided for by the sliding scale agreed to. We understand and sympathise with the point of view of the operatives, but what possible good to them or anyone else can be expected from a strike or lock-out? If anyone is anxious to force an issue, we might point to what is now happening in the Eastern Counties.

The Registration Bill. We are glad to learn that the Council of the R.I.B.A. have decided, in pursuance of the decision of the Special General Meeting on January 29, to invite all the bodies which were represented on the Unification and Registration Committee, and any others which may be affected, to consider the draft Registration Bill, to indicate any points in which they think it might be improved or amended, and in due course to appoint representatives to attend a meeting for the discussion of the Bill. While the Council by this decision have not actually reappointed the Unification and Registration Committee, they have done the next best thing, and it may yet be possible for the Committee, in their consideration of the draft Registration Bill, to indicate their proposals for the unification and registration of the profession.

The Housing Subsidy. The terms of Government assistance to housing have now been fixed at an annual subsidy to local authorities, for houses of the non-parlour type, of £6 per annum for twenty years, this being estimated to be half the annual deficit. We shall presumably have to wait till the Housing Bill is issued before we hear of the conditions that are to be imposed, and we may be sure that these conditions will be left as generous as is consistent with good housing. At the same time, we hope the Minister will insist upon imposing a statutory limit on the number of houses that may be built to the acre under State assistance, and he will merely be conforming with generally recognised principles of public health if he fixes his absolute maximum at twenty houses to the *net* acre, which is a very different thing from "twenty houses to the acre."

The Housing Question and Rent Restriction. There is a curious aspect of the housing question and Rent Restriction which we have not seen raised, in connection with houses which in normal conditions would have come within the higher class of houses subject



Photograph by Mr. F. R. Yerbury.

Great Fosters, Egham. MESSRS. ROMAINE WALKER & JENKINS, Architects.
[From the Exhibition of Garden Design at the Architectural Association.]

to restriction, but which in consequence of the interference with a free market occasioned by the Rent Acts whenever they can be got in hand are only offered for sale, either by the owners, or by speculators who buy such houses solely to re-sell them in the present times of competition. In seaside resorts in the South-West of England, for instance, houses with two or three reception rooms and only four or five bedrooms, which were built before the war for £1,000 to £1,200 on small plots of half an acre to an acre, cannot now be rented at all, but are offered for sale and purchased for sums of £3,000 to £5,000 or more, whilst the larger houses, owing to the difficulties of securing service, are either unsaleable or offered at far lower prices. The fool cannot be protected from his folly, and if people are willing to give such absurd sums in order to get housed it is not surprising that the prices are demanded, but these extortionate prices will have a bearing on the housing question in the future.

Levelling up Rent.

Mr. Walter Cook and others have pointed out with justice that if Rent Restriction is to be continued the best course to adopt is to level up the rents of restricted houses to the rent of unrestricted houses, so that by increasing the rents under the Restriction Acts the steep gradient may gradually be lessened; but what is the level of unrestricted houses to be? Numbers of these small houses in seaside resorts of beauty and renown are now held at the prices we give above, and these houses will eventually change hands; but at what price? The rentals, if they were now offered on lease, would be anything from £170 to £300, and the builders of new houses will base the prices they demand or the rent they ask on these wholly unreasonable prices obtained in the districts. Thus the interference with a free market in houses will have unlooked-for results beyond those at present experienced. It has played into the hands of those who are extortionate in their demands and the market price has been destroyed. Half the population is housed at uneconomic rents at somebody else's expense, while the other half is laid open to extortion and must pay any price to get housed, and these prices will, to a great degree, permanently affect the market value of house property in the future.

The Charing Cross Scheme.

The foreword to the catalogue of the exhibition of plans, drawings, and models of a new road bridge at Charing Cross, arranged by the London Society, and now on view at the Old County Hall, is quite remarkable for the courageous and enlightened civic attitude which it reveals—one not afraid to make its appeal for the best things. It shows us that we are leaving behind the shabby ideals of utilitarianism and are aiming at a better outlook. Speaking of the new bridge, the foreword tells us: "It should show that we have left behind us the poor ideals of utilitarianism and that we have set our hearts on other things than buying in the cheapest markets and selling in the dearest," and adds, "the best of our engineers, our architects and our sculptors should find their opportunity," and we may add the hope that we may know the best and choose wisely when the opportunity comes. In such a foreword we find the justification of new hopes for the time, superseding the negations of pessimism rather active just now. In rising above merely professional and utilitarian standards, there is every hope that when the Charing Cross scheme approaches practical realisation it will give promise of a great advance on previous efforts and be the expression of this nobler outlook.

Photograph by Mr. F. R. Yerbury.

Garden Stairway, Plas Brondanw, Merioneth.

Mr. Clough Williams-Ellis, Architect.

[From the Exhibition of Garden Design at the Architectural Association.]

Architect and Painter.

The paper read recently on this subject by Mr. Walter Bayes at the R.I.B.A. (a report of which appeared in our last issue) seems to us as having a little too much the appearance of wooing the architect on behalf of the painter, an attitude not quite agreeable to some of them. The subject of the drifting apart of architecture and painting is more or less recurrent, and we must look a little deeper to understand the matter. The idea that painting should be the link between architecture and the public is hardly just to architecture. The architect will hardly accept the idea that he is dependent on the painter to popularise architecture; nor is it the case, and he will probably prefer to stand on his own legs without such nursing. Neither can it be accepted that painting is more applicable to correct the ugly features of a building and is not so applicable to its good ones, and though it is desirable there should be co-ordination in any painting scheme for a building, it does not require that one painter should be responsible for all of it. It should be remembered that if there is a lack of co-operation between architect and painter, there is also a lack of co-operation between painters themselves. Without a more corporate aim within the arts not much can be expected so far as general results are concerned. What is most necessary is for the architect not to depend too much on all these protestations, but to seek out good craft work himself, taking his own independent course in doing so, for they have unfortunately just a hint of special pleading, and may otherwise lead him not towards but away from the best resources of craftsmanship.

GENERAL NEWS.

EASTER HOLIDAYS.

Owing to the Easter Holidays our next issue will be published on Thursday, March 29. Matter for publication in our editorial pages must, therefore, reach the Editor by first post on Tuesday, March 27.

Professional Announcements.

Mr. James M. Honeyman, A.R.I.B.A., has commenced practice as an architect at 194, West Regent-street, Glasgow, and will be pleased to receive manufacturers' catalogues and samples for filing.

The telephone number of Messrs. John Belcher, R.A., and J. J. Joass, F.R.I.B.A., of 10, Old Burlington-street, W. 1, is now Gerrard 7154.

Mr. C. Donald Allderidge, D.S.O., A.R.I.B.A., architect and surveyor, has commenced to practice at 15, Bowlalley-lane, Hull, and is prepared to receive catalogues, &c.

On and after April 1, the address of Mr. Percival M. Fraser, F.R.I.B.A., will be 32, Buckingham Palace-road, S.W. Telephone No. Victoria 9189.

Mr. J. F. B. Cowper, A.R.I.B.A., late superintending architect of the Ministry of Agriculture for the South of England, has resumed practice at 5, King's Bench-walk, Temple, E.C.4. Telephone: Central 7746. He is prepared to receive trade catalogues.

The Architecture Club.

The exhibition of the Architecture Club at Grosvenor House is to remain open until Saturday, April 7. The exhibition will be closed on Good Friday, March 30.

Excavations at Colchester.

The first specimen of Roman mosaic pavement to be found in Colchester bearing pictorial representation has been unearthed at the site of a Roman villa in Queen's-gardens, Colchester. It is a specimen 10 ft. square with a border of large red tesserae 2 ft. in width, making the total dimensions of the pavement 12 ft. square. A geometrical ornamental centre is surrounded by panels bearing the forms of animals, i.e., a winged dragon, serpent, &c. The designs are worked in several colours, including red, brown, black, white and buff. At one corner there is a panel representing a double flower. It is probable that the date of the pavement is of the latter part of the first century.

Victoria and Albert Museum.

The Victoria and Albert Museum has acquired out of the funds of the Murray Bequest four panels of stained glass from the recent sale of the Engel-Gros Collection in Paris. Three of these are Swiss and the fourth is South German.

Hammersmith B.C. Housing Scheme. Messrs. Hare & Lisle, Architects.

COMPETITION NEWS.

"THE BUILDER" COST OF BUILDING COMPETITION, No. II.

Some notes on Part II of *The Builder* Cost of Building Competition (open to builders) are given on p. 492.

Tunbridge Wells.

For the Town Council.—Designs for a pavilion. Sending-in day, July 3. (See advertisement this week).

National War Memorial, Melbourne.

We understand that it is proposed to erect a National War Memorial at Melbourne at a cost of £250,000, and that a competition for suitable designs will be open to Australians, not necessarily residing in Australia, and British subjects resident in the Commonwealth. The competition will be in two stages, preliminary and final, and designs will be received in the first stage by the Right Hon. the Lord Mayor of Melbourne, Chairman of the Executive Committee, Town Hall, Melbourne, Australia, on and before June 30, 1923. Conditions may be obtained from the Agent-General in London, Victoria House, Melbourne-place, Strand, on payment of £2 2s.

Other Competitions.

Other competitions still open include the following (the dates given are, first the sending-in date, and second the issue of *The Builder* in which full particulars were given):—Dewsbury War Memorial (March 31, Dec. 1). Polytechnic Institute, Reval (April 15, Feb. 16). Shops at Prestwich (March 9). Haifa Business Centre (May 15, March 9). Bournemouth Pavilion (May 12). Cork Municipal Buildings (June 1, March 16). Ossett War Memorial (March 28, March 9).

Hammersmith B.C. Housing Scheme. Mr. Ernest Franck, Architect. (See p. 477).

R.I.B.A. MINUTES.

The following notes are from the Minutes of the meetings of the Council of the Royal Institute of British Architects, held on February 19, and March 5:—

Annual Exhibition.—It was decided to hold an Exhibition of French Architecture in the R.I.B.A. Galleries in the autumn.

Architects' and Surveyors' Approved Society.—A grant of £75 was made to the Approved Society to assist in liquidating the deficit on the Administration Account.

Housing Policy.—The Report of the R.I.B.A. Housing Committee on the National Housing Policy was adopted and ordered to be submitted to H.M. Government.

Buildings By-Laws.—The Report of the Building Code Joint Committee was adopted and ordered to be submitted to H.M. Government. This Report recommended the periodical revision of by-laws, the establishment of an Appeal Tribunal, and contained suggestions for a greater uniformity in local by-laws.

Empire Forestry Association.—Mr. H. D. Searles-Wood was nominated to serve upon the Governing Council of the Empire Forestry Association as the representative of the R.I.B.A.

Registration Bill.—In pursuance of the decision of the Special General Meeting on January 29, it was decided to invite all the bodies which were represented on the Unification and Registration Committee, and any others which may be affected, to consider the draft Registration Bill, to indicate any points in which they think it might be improved or amended, and in due course to appoint representatives to attend a meeting for the discussion of the Bill.

Academic Dress for Members of the R.I.B.A.—It was decided to refer to a general meeting the question of the adoption of an academic dress for members of the R.I.B.A.

London Squares.—A communication is to be sent to the L.C.C. urging that steps be taken to ensure the preservation of the London squares.

South Africa.—Mr. E. M. Powers, F.R.I.B.A. was appointed Hon. Secretary for the R.I.B.A. in South Africa in succession to the late Arthur H. Reid. It was decided that the Association of Transvaal Architects be admitted as an Allied Society of the R.I.B.A. in place of the Transvaal Institute of Architects.

Daywork Charges.—Mr. Max Clarke, F.R.I.B.A., was appointed to represent the R.I.B.A. on a Joint Committee of architects, surveyors, and builders to be formed for the purpose of reporting upon the question of charges for daywork with a view to establishing an agreed schedule.

The Incorporation of Architects in Scotland.—The draft by-laws of the Incorporation of Architects in Scotland were approved under the provisions of by-Law 78.

The Institute of Cost and Works Accountants.—It was decided to present a petition to the Privy Council in opposition to the petition of the Institute of Cost and Works Accountants for the grant of a Royal Charter.

CHARING CROSS BRIDGE.

A PLEA FOR A HIGH LEVEL SCHEME.

By Professor Stanley D. Adshead, F.R.I.B.A.

The removal of Charing Cross Station to the south side of the river, and with it the railway bridge, provides an opportunity for the construction of a new road bridge and approach from Charing Cross to the Great South Station, which, as a London improvement, would rank in importance with great schemes like the making of Regent-street and Kingsway. There are two solutions to the problem, or, rather, there have been forthcoming alternative suggestions for a high level and a low level approach. Advocates of the high level proposal cross the river by a bridge which has a level roadway and which emerges from the Strand. Advocates of the low level proposal take the line of Northumberland-avenue and spring, as it were, from the Embankment.

The relative merits of the alternative schemes can best be considered under the following heads:—

(1) "As an architectural conception."
(2) "As a financial undertaking."
(3) "As to convenience of planning."

Perhaps the strongest reason for choosing the Strand level bridge and approach is its greater architectural possibilities. The Thames is a river, which, as it flows through London, is far too noble and grand in scale to be treated as a stream. Great rivers, such as the Rhone at Lyons and the Seine at Paris, have embankments at two levels, and the roadways of their bridges emerge from the upper levels. London, with its great tidal river, the Thames, has its water level embankment, and its upper parallel roadway, the Strand and Whitehall.

Except Westminster, which is at the termination of the Embankment, all London's bridges erected so far are approached from the upper level. The size and scale of the river seems to demand that it be crossed in this way. A horizontal line of parapet is necessary as having greater dignity and simplicity than one which is curved.

Standing at Charing Cross and looking out on the river, it must be apparent to everyone that Waterloo bridge is a far nobler conception than Westminster, and one that suggests that simplicity of treatment which is an essential of the greatest of architectural works. As a financial undertaking, the bridge, "qua bridge," would probably cost as much to carry over from the level of the Embankment as from a height that would span it. It cannot be contended, however, that the high level scheme could, as a whole, be carried out with the same financial outlay as a bridge which involved nothing more than breaking into the parapet of the Embankment, and constructing, as it were, a spring board in the roadway; a bump that would run out up Northumberland-avenue and slope down on to the Embankment itself either way.

The high level bridge would be a bigger scheme involving a bigger financial outlay, as it would necessitate the construction of a great approach, but here there would be betterment, and so much so that it would go a considerable way to pay the cost of the bridge itself, whereas in the other case very little betterment would accrue.

As to the relative convenience of the two proposals there is little to choose as lines of route. Northumberland-avenue is certainly very direct as a connecting link with Trafalgar-square, and, furthermore, the low level scheme provides an opportunity for a crossing for embankment traffic.

But the weakness of the low level proposal, and where it entirely fails, is in the absolute impossibility of carrying it out without having resort to the necessity of raising the level of the embankment at the point of departure. This is rendered necessary in order to obtain sufficient height between the underside of its near arch and high-water level. The idea of a switch-back along the Embankment in order to rise over its raised approach; the idea of an embankment that is not level, but has little hills along its course, is sufficient to condemn it at the outset. Again, the Northumberland-avenue route, which at first sight appears very direct, is not so in reality, for the Northumberland-avenue exit on Trafalgar-square is already one of the most dangerous and difficult crossings in London, and this is largely due to the grade.

A Strand approach, as most suggestions show, offers a far easier course from the north-west (where most of the bridge traffic will come from), allowing as it does all traffic to pass before the National Gallery or from Charing Cross-road by a widened and improved King William-street, at the back of Saint Martin's Church.

LOW LEVEL PROPOSALS.

By Mr. D. Barclay Niven.

A low level bridge from shore to shore is the most simple, natural and direct method of crossing a river. From Charing Cross such a bridge over the Thames is both desirable and practicable, Westminster Bridge up stream and Blackfriars Bridge down stream both being low-level bridges. The height of the bridge above the water, proposed in one of the schemes exhibited at Spring-gardens, is in every way equal to these, its central arch having a clear water way above Trinity high-tide level of 24 ft., and the side arches 20 ft. Consequently, any craft which passes either Westminster or Blackfriars would pass under this bridge (being on the bend of the river it is shown with three arches only, so that barges may float through broadside on, if necessary). The longitudinal axis of the new bridge coincides with the axial line of Northumberland-avenue and can be continued on past Waterloo Station as a great spinal feature in the future development of the South side. The gradients of the approach roads to the new bridge are easy, in no case being more than 1 ft. in 50 ft. This is the same as to Westminster Bridge. The south approach to Blackfriars Bridge is 1 ft in 35 ft., the south approach to Waterloo Bridge is 1 ft. in 38 ft. In this proposal the Victoria Embankment roadway is shown gently inclined up to the bridge, starting from Cleopatra's Needle on the one side and from a corresponding point on the other, while in Northumberland-avenue the rise begins at the entrance to the Hotel Metropole. The Embankment-gardens would not be altered in level.

Tramlines would be laid over the new bridge and so relieve Westminster Bridge, it being intended that most of the tram traffic would proceed by this route to the south side and continue along Belvedere-road instead of as at present. Consequently, the traffic on the Embankment between the new bridge and the Houses of Parliament would be greatly diminished. After passing along the river by the new bridge, all traffic would quickly be dispersed along roads radiating from the bridge at either end thereof. On the north side, two of these roads already exist, viz., Whitehall-place and Northumberland-avenue, a third road being shown through the area where Charing Cross station now stands (thus opening up very valuable frontages). From the termination of this third road an improved connection will, no doubt, ultimately be formed round the back of St. Martin's Church as an important traffic link from north to south.

EXHIBITION OF DESIGNS FOR A NEW BRIDGE AT CHARING CROSS.

The London Society is to be congratulated on its enterprise in arranging this exhibition, now on view at the Old County Hall, Spring Gardens. There are no less than eighteen separate schemes for the Charing Cross improvement that is gradually becoming more and more vital to London. The problem presented is in the main one of levels and traffic routes, and at this early stage we can only profitably concern ourselves with these broad considerations. When the town plan has been settled there will arise the question of design. Seeing, therefore, that we are dealing at the moment with a town-planning scheme of considerable complexity in three dimensions, models are vastly more comprehensible than plans and sections, or any other method of representation. The trained eye is used to reading drawings of buildings and, with a plan, section, and elevation, it is not hard to visualise the structure. It is otherwise when one is dealing with the intricate levels surrounding Charing Cross.

Few would deny that the existing bridge is a monstrous horror, and that its disappearance would add more to the beauty of London than the abolition of anything else (except possibly its twin brother at Cannon-street), but one cannot help feeling that unless those who are bent upon the removal of this eyesore show a united front there is a danger that when the bridge dies of old age a new one of the same standard of design, but stronger and more durable, will take its place.

Mr. John Murray is right when he says that in order to prevent any further unnecessary interests accruing, the problem should be considered without delay by the authorities concerned. One of the first points to decide is, of course, whether the bridge should be of the high level or low level type, or whether it should form a compromise between the two—we have an example of the high level in Waterloo Bridge, while Blackfriars and Westminster are of the low level type. One of the main difficulties must, of course, lie in gaining the co-operation of the railways, and now that the London & South Eastern at Charing Cross forms part of the same group as the London & South Western at Waterloo, it is possible that the shifting of the Charing Cross terminus to the south side may be less difficult of realisation.

The necessity for a new road bridge at Charing Cross cannot be questioned; not only is the distance between the bridges of Waterloo and Westminster by far the longest in central London, but the continual press of traffic debouching from Waterloo Bridge into the Strand at right angles is the cause of constant blocks and consequent delay—a state of affairs that would not materially be improved by the widening of Waterloo Bridge.

The exhibition is one that should be visited by every Londoner who has the future of his city at heart. We cannot continue to let London develop in "hand to mouth" fashion. The traffic problem is imperious in its demands, and any scheme that takes account of future requirements is better than blundering blindly along, erecting something to-day that, in 1933, we shall wish to destroy. One might perhaps suggest that these schemes, many of them, go rather too fully into the architectural details of the buildings that might be erected on this or that site; details are rather liable to obscure the main issue or, by being taken too much as part of, even sometimes to prejudice the scheme itself. The simplest possible presentation of any scheme is also the most effective, since the names of streets and squares and the type of building to be erected on any particular site are altogether separate considerations.

We will not enter here into the controversy as to levels, as these alternatives are dealt with on this page, but the catalogue contains a brief account of the eighteen schemes on view at the exhibition, which are by Professor S. D. Adshead, F.R.I.B.A., Mr. Lionel Barrett, A.R.I.B.A., Mr. Adrian Berrington, Sir Reginald Blomfield, M.A., R.A., D.Litt., Mr. W. D. Caroe, M.A., F.S.A., F.R.I.B.A., Mr. Robert Collier, F.R.I.B.A., Mr. Edwin T. Hall, F.R.I.B.A., Mr. Ernest Herbert, Mr. Fredk. Nesbitt Kemp, Mr. W. L. Lucas, F.R.I.B.A., Mr. G. A. T. Middleton, A.R.I.B.A. Mr. John Murray, F.R.I.B.A., F.S.I., Mr. David Barclay Niven, F.R.I.B.A., and Mr. T. Raffles Davison, Hon.A.R.I.B.A., Mr. E. Frazer Tomlins, and Mr. Paul Waterhouse, P.R.I.B.A.

CORRESPONDENCE.

Statutory Registration of Architects.

Sir,—I am directed by the Council of the Royal Institute of British Architects to inform you of the steps that have been taken by them since the beginning of the year in pursuance of the policy of Statutory Registration for the architectural profession. A Bill was drafted and submitted to a general meeting of the Royal Institute at the end of January. The meeting was very fully attended and it was decided, as a first step, to consult the other professional Societies and interests affected and to endeavour to obtain a general consensus of professional opinion in favour of the Bill.

Copies of the Bill have, accordingly, been sent to all the architectural societies concerned and to the representatives of unattached architects, and they have been invited to consider the Bill in principle and in detail, and to inform me of all points in which they think it might be improved or amended.

On the receipt of this information the Registration Committee of the Royal Institute will endeavour to embody the suggestions in the draft as far as may be practicable, and a meeting of all interested parties will be arranged at which the Bill, as amended, will be examined and discussed.

It is hoped that by this means the unanimity which is desired will be obtained in support of the Bill.

Ian MacAlister,
Secretary, R.I.B.A.

Colour in Our Streets.

Sir,—Though Mr. Keen is undoubtedly correct when he claims that more light as well as more colour is wanted in London, I am inclined to think he exaggerates the climatic drawbacks of our atmosphere. Everyone who resides a dozen miles outside the Metropolis is aware that on many days in autumn and winter when he has had to use artificial illumination in his London office his wife and family have been basking in the sunshine of their suburban garden. If we could get rid of our smoke, London would enjoy at least a third more sunshine, and the value of colour schemes in street architecture would be proportionately enhanced.

It is impossible to believe that the existing sootiness of the air of the City will long survive the steadily growing agitation for more light and cleanness. Smoke restrictions, smokeless fuel, substitution of gas and electricity for domestic heating and cooking—these forces are bound to make serious inroads upon London's pall of smoke in the next decade. Therefore, I contend, those who are designing the streets of the future would do well to take into their calculations the advantage of using coloured glaze-ware for the external embellishment of their buildings and the brightening of City life.

In any case it is surely better to employ for elevations exposed to a grimy atmosphere materials with a surface like glazed brick, that can be restored to their pristine freshness by the simple application of a hose-pipe and water, than a textured material like Portland stone, that offers hospitable pores to every flake of soot, and can only regain a clean appearance through a long and costly process of high-pressure steam jets.

Woking. A. P. Grubb.

Mr. J. M. Hogge, M.P., sends us a communication in which he says that as he passes through the garden suburb representing our present-day effort to materialise Utopia he is struck by the curious timidity of the British architect to employ colour in the external embellishment of his buildings. In other directions his work shows a praiseworthy effort to rise above the dead level of convention. In most of the houses composing the garden cities grace and diversity characterise the plan. Each dwelling is given an individuality that charms the eye without destroying the general harmony by over-emphasis of line or form. But in the matter of colour-contrasts monotony prevails where diversity should reign. Colour enters to a certain degree, of course, into the architect's plan. Pleasing contrasts are achieved by the combination of warm red brick or tiles with cream or grey roughcast. Here and there a more adventurous builder has crowned his house with blue-green tiles. But why should the legitimate employment of colour effects be limited to red and white? Other colours blend harmoniously with the background of Nature. It may be objected that whilst, theoretically, no bar exists to the freer use of colour in external architecture, in practice the architect is limited to the natural tint of brick, which is red. No such objection can be held in these days of advance in the production of terra-cotta and glazed brick. The only obstacle to a larger liberty in the adornment of our houses is the innate conservatism of architects and builders.

Hammersmith Borough Council Housing Scheme.
Mr. Matthew Dawson, F.R.I.B.A., Architect. (*See p.* 477.)

Wages in the Building Trade.

Sir,—I notice on page 457 of your current issue an extract from the paper on housing, read by Mr. T. P. Bennett, contains a reference to some published data of mine relative to the percentage rise and fall in the rates of wages. Unfortunately, this statement contains an inaccuracy, inasmuch as it states:—"For most artisans in London during 1922 stood at 1s. 6d. per hour, &c."

In actual point of fact the wages at the early part of 1922 were 2s. 0½d., and fell by stages, reaching a rate of 1s. 8d. per hour, as and from June 1, 1922.

In view of the fact that negotiations are still pending for certain revisions in the rates of wages, it would appear necessary that a correction should be made at the earliest possible moment to prevent misconception.

F. J. Sayer.

"The Builder" Cost of Building Competition. Winning Plan. "B" Type.

Sir,—I saw designs yesterday at Conduit-street. Can you reconcile the dimensions given for rooms on first and ground floors? I don't see a solution:—

First Floor—Bedroom 1, 12 ft.; 2, 9 ft.; 3, 14 ft. 7½ in. = 35 ft. 7½ in. *Ground Floor*—Kitchen, 12 ft.; sitting-room 1, 9 ft.; 2, 11 ft. 6 in. = 32 ft. 6 in. There is a difference of 3 ft. 1½ in.

Further, the cupboards in No. 3 and the centre fireplaces and linen in 1 and 2 diminish area of floor space.

Edward J. Paine.
2, Montenotte-road, Crouch End, N.8.

[Mr. Lander made a clerical error in figuring the sitting-room and bedroom over. His sitting-room is really larger than he figures it, 12 ft. by 11 ft., instead of 11 ft. by 9 ft., and the bedroom over 11 ft. by 6 ft. 10½ in., instead of 11 ft. by 9 ft.—Ed.]

Hammersmith Borough Council Housing Scheme.
Mr. Matthew Dawson, F.R.I.B.A., Architect. (*See p.* 477.)

Some letters on *The Builder* Cost of Building Competition No. 1 are given on p. 486.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Mr. H. D Searles-Wood presided at a meeting of the R.I.B.A., held at No. 9, Conduit-street, W. 1, on Monday evening.

Obituary.

The Secretary (Mr. I. McAlister) referred to the deaths of the Earl of Plymouth and Sir James Jebusa Shannon, R.A., and a vote of condolence with the relatives was passed.

The Hammersmith Housing Scheme.

Mr. G. E. S. Streatfeild, O.B.E., D.S.O., F.R.I.B.A., in the course of a paper on the Hammersmith Housing Scheme, said: The Council asked the late Mr. Henry T. Hare (then President of the R.I.B.A.) to undertake the work and appoint three other architects to act with him as a panel, in conjunction with Mr. Hampton Clucas, the Borough Surveyor. Mr. Hare nominated Mr. Ernest Franck, Mr. Matthew Dawson, and himself (the speaker) to act in that capacity. The scheme, as originally proposed, was divided into two distinct areas, the northern scheme for new houses, the southern scheme for clearing and replanning insanitary areas near the Creek, and also a temporary housing scheme to meet the immediate urgent demand. The scheme consisted of converting a munition filling factory of timber sheds into 41 hutments at a cost of £18,000, the accommodation varying from two to four bedrooms. It was never intended that they should be anything but a temporary palliative, but owing to the conditions in the borough they were still being occupied.

With regard to the southern scheme, in replanning that insanitary area one of the important advantages to be gained was to construct a by-pass road, so that through traffic could be diverted from that part of King-street. There was also another serious defect in the communications of the borough, in that there was no good road from north to south joining the Uxbridge-road to King-street, and they would see on the plan how it was suggested that they might be remedied, by taking advantage of the existing roads and widening and connecting them up where necessary. In dealing with that area it was impossible to avoid considering the treatment of the river front. It was suggested to make the mouth of the creek into a boating centre with club houses and boat-building yards. In developing the area to be cleared, it was proposed to build tenement houses round large quadrangles with grass in the centre of the courts. It was also proposed to put a building in the centre of the quadrangle, with small lock-up divisions in which perambulators could be kept, as it was impossible to expect women to drag their perambulators up two flights of stairs. It was also proposed to form in the roof of each block a common laundry, which would be available for the use of the various tenants. The accommodation generally provided was a living room, three bedrooms, a kitchen, scullery, &c.

Dealing with the scheme for new houses on the Wormholt Park Estate, Mr. Streatfeild said the situation lay south of the Central London Railway Extension and of the London County Council Old Oak Estate; adjoining it on the east were the grounds of the White City. That altogether covered an area of 125 acres, which was bought at an average price of about £593 per acre from the Ecclesiastical Commissioners. In laying out the estate it was decided to avoid corner blocks, and to keep as far as possible the corners of the roads open and to provide ample open spaces. For that purpose certain blocks of the houses were set back to form open squares, and playgrounds for the children were arranged behind the houses at the end of the gardens.

As to materials, against the late Mr. Henry Hare's strongly-expressed opinion, they were compelled by the Ministry of Health for the sake of economy to adopt a partially concrete block construction in the first contract for 68 houses, and that experiment had amply justified Mr. Hare's opinion. The remainder of the contracts had all had 11 in. cavity external walls and main internal walls of brick only. The difficulty of obtaining tiles was overcome by importing pantiles from Belgium, which were brought up to Hammersmith in barges. As to other points of construction, the upper windows were all hung to protecting hinges, which made the outside easy to clean, and in all bedrooms one small pane in a metal casement was hung to give ventilation.

The Hammersmith Borough Council determined to maintain a high standard as originally proposed in the Tudor Walters report, and insisted that all the houses should be provided with hot water, lavatory basins, and bathrooms separate from the water closets, and in the later houses to have a height of 8 ft. 6 in. clear to all rooms. The total cost of building 590 houses, four shops and four flats amounted to about £590,000, an average of about £1,000 per house. The cost of the roads and sewers would be carried out at an estimated cost of £162,460. The rents had been fixed for "A.3" houses at 14s. a week, for "B.3" houses an average of 16s., and for "B.4" an average of 17s., the tenant paying all rates. The Council felt it important for the sake of health and cleanliness that all the houses should be lighted by electricity; at the same time, it was felt that gas was very essential for cooking purposes.

The frontages facing Western-avenue, Old Oak-road, and Steventon-road were being reserved for houses of a larger type, and were available for private buildings and for shops in certain selected localities. Sites for public buildings and churches had been reserved at axial points, where they would close the end of a vista. It was shown how that occurred with the church already erected. An open-air swimming bath was already under construction by the Borough Engineer. In spite of all that had been done the condition of the housing in Hammersmith was still causing much anxiety to the Mayor and the Borough Council. There were 1,928 families still living in one room only, 5,615 families living in two rooms only, and over 8,000 families living in three rooms. If that was the case in Hammersmith, what must it be elsewhere, and how urgent must be the need for carrying on the housing policy.

Discussion.

Mr. W. Percy Waters, Chairman of the Hammersmith Housing Committee, proposed a vote of thanks to Mr. Streatfeild.

Mr. Raymond Unwin, F.R.I.B.A., in seconding, said Mr. Streatfeild had remarked that he thought architects must be sick of the housing question, but he (the speaker) hoped that that was not true. It would be a disaster to this country if architects became sick of the housing problem. They had had some criticism of the housing policy, but many of their difficulties were inherent to war conditions. It had been said that their standards were too high; they had all made mistakes, no doubt, but he was not one of those who felt that that had been really the cause of their difficulties. They must always realise how very difficult it was for those who were struggling with financial and administrative problems to realise the position as architects did. They had not the benefit of the clear guidance or sound technical knowledge in the fixing of standards, and it was difficult for them not to think when houses were soaring up in price that there must be something wrong. But architects and others concerned must not on that account be sick of housing, or alter their clear idea that after all there was only one way to solve the housing problem, and that was by getting good houses built and improve the standard of all houses in the country. They knew that that was the economic way of solving the question. They were all aware that if they congested houses on land they had to spend more on roads, and he questioned very much whether the great boon that had been emphasised that evening in having twelve houses to the acre instead of a possible twenty, had cost the country sixpence. His own impression was that it had been a considerable monetary saving. There was no economy at all in crowding the houses on the land, and he believed they would have had to spend more on their housing schemes if the density had not been reduced. It was possible to build houses, such as they saw illustrated on the walls in that room, at reasonable prices, and it ought to be possible before long to pay rents to make a reasonable return on the prices that were paid. He hoped that architects would go on studying the problem and help to find a solution. It was the most important domestic problem they had to solve.

Mr. Leslie Gordon, Town Clerk of Hammersmith, pointed out that financiers and producers were still getting a hundred per cent above 1914, but the workers were down almost to 1914, either in rates of pay or loss of time, and they were being forced down now very much lower than they could afford. It was that conflict of interests in this country that was going to jeopardise the whole solution of the housing problem. He was glad the R.I.B.A. was giving so much attention to the housing question; in the past it seemed that housing had been the sort of thing that architects had turned up their noses at, but as Mr. Streatfeild had indicated, there was real architecture in housing, and that would have a very big effect on the future morale of the country.

Mr. Streatfeild, in acknowledging the vote of thanks, said he felt anxiety that the Minister were only to give their support to non-parlour houses. He hoped the real idea was to lift the weight off the top and build houses for men who were living in inferior houses, but could afford something better, and so gradually raise the whole standard of the nation's housing conditions.

Hammersmith Borough Council Housing Scheme.
MR. G E. S. STREATFEILD, F.R.I.B.A., Architect.

ECONOMICS & ARCHITECTURAL PRACTICE.

By F. RADFORD SMITH.

II.—SCHOOL BUILDINGS.

The rapid increase of national expenditure on education has aroused a greater volume of protest than has been caused by increases under any other head. The advisability of a considerable extension of a system of education which has proved itself to be of a nature unacceptable to large sections of the community is a matter of national policy with which the architectural profession is not primarily concerned.

That there is, however, a serious deficiency of accommodation in our existing school buildings is beyond question, and the means of providing the necessary additional accommodation in the most economical manner is decidedly a question which concerns the architect. Our professional educationists constitute an exceptionally well-organised and enthusiastic body, capable of bringing considerable pressure to bear in support of their opinions. Suggestions of modifications to the type of school buildings which entail the sacrifice of any features which meet with the approbation of the majority of the teaching profession will, therefore, be certain to meet with vigorous opposition.

At the same time it is clear that present economic conditions, together with the enormous increase in building costs, render the prospect of the provision of elementary schools, at a cost of from £40 to £50 per head of accommodation, impossible of realisation. Even before the war, when the economic resources of the country were incomparably better than they are to-day, the constantly rising cost of school buildings was deemed to be a matter of such moment as to justify the institution of a Departmental Committee to inquire into the possibility of adopting means to secure reduced costs. Consideration of the expert evidence reviewed by the Committee reveals the fact that chief attention appears to have been devoted to an attempt to secure economy by the adoption of cheaper materials of construction, and the conclusions arrived at seem to be that the substitution of cheaper materials necessitated so considerable a reduction in the life of the structures as to be of doubtful expediency.

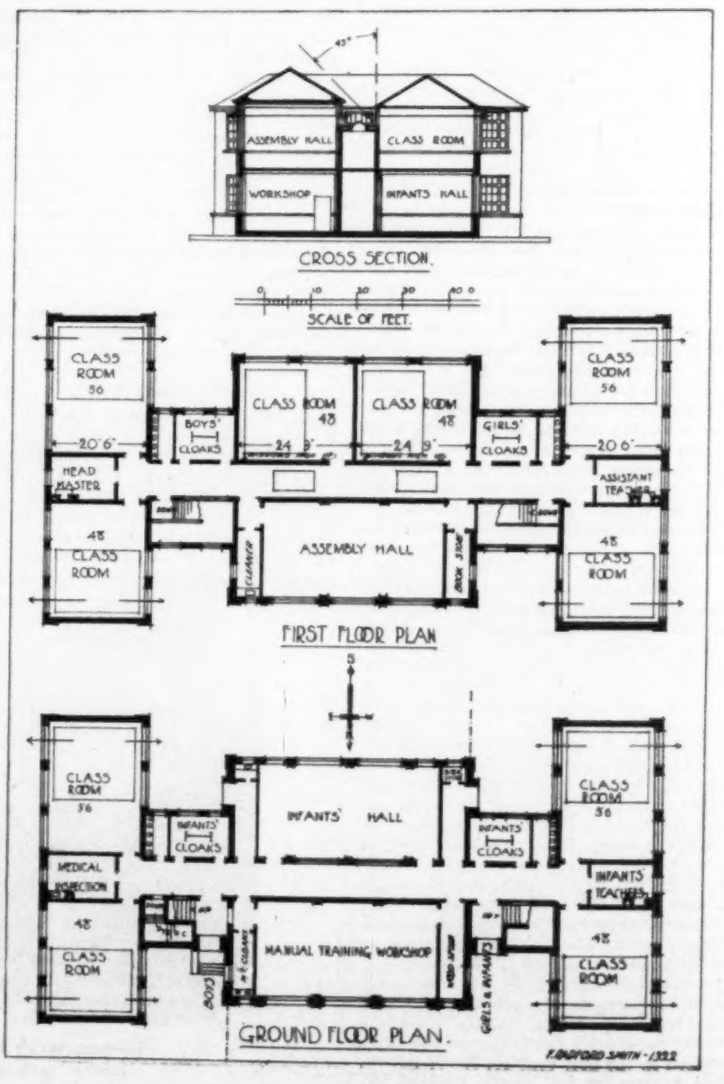
It is sometimes said that the Ancients could not have fully realised the economic potency of compound interest, as otherwise they would not have been so extravagant in their methods of construction. However that may be, it is of interest to note that since the introduction of School Boards in 1870 there have been no less than five distinct changes made in the general character of buildings which the Board of Education would be prepared to approve. In fact, the type of plan which was officially considered as most desirable for school buildings so recently as 1910 would not, in 1914, have been approved at all. In view of past history, then, it does seem as if insistence upon a type of construction such as is essential for obtaining a 50 or 60 year loan is of questionable expediency in cases of buildings the nature of which is so constantly being amended.

There is a natural tendency for initiators of reforms of acknowledged value to regard as highly improbable the possibility of further developments rendering their own inventions obsolete. Mr. Arnold Bennett demonstrated in "Milestones," in a delightful way, how the looked-for millennium never eventuates, and the belief that finality can be achieved in the development of educational buildings (themselves the outcome of a phase of public endeavour which is yet in its infancy) bespeaks gross egoism.

The repayment of a loan in thirty years only requires the allocation of 1½ per cent. to the sinking fund (at 5 per cent. compound interest), and in view of the very rapid developments still apparent in educational buildings, and having regard to the present abnormal economic conditions, it might be more expedient thus to reduce the limit of the period for repayment of loans on school buildings. The adoption of such a course would not only reduce capital expenditure, but would necessitate a reconsideration of the possibility of the use of cheaper materials of construction. The average cost of elementary schools per head of accommodation rose between January, 1910, and January, 1915, by about 40 per cent. During the same period building costs on the average only increased by about 10 per cent., so that the remaining 30 per cent. of increased cost may be reasonably regarded as being due to changes in the type of plan demanded for school buildings.

Elementary schools in which each classroom was provided with windows on opposite sides of the room, opening directly into the open air, were in existence before 1910, but universal insistence upon this type of building was not made by the Board of Education. Indeed, the overwhelming majority of schools erected in 1910 were still of the type in which as many of the classrooms as possible opened directly into a central hall, and direct cross-ventilation had not become officially a definite requirement. Most of the earliest examples of cross-ventilated schools were to be found in districts where building costs were below the general average, and usually upon fairly level sites. Thus the greater cost involved in the new type of building did not appear to be as great as it would have done had the pioneer examples occurred in districts where costs were high or sites unsatisfactory.

The most obvious solution of the problem arising out of the desire for direct cross-ventilation was in the adoption of a plan on one floor only. Provided the site be a reasonably flat one, of sufficiently ample area, no great difficulty occurs in arranging for either an isolated central hall or for direct cross-ventilation in buildings so planned. School buildings on a single floor, however, require nearly double the area of roof and double the length of foundation and external walling that are required for buildings of similar capacity but of two floors. If the site has any considerable slope the extra cost involved in a single-story building is further aggravated by the greater amount of walling necessitated below the level of the ground floor. Where cramped sites only have been available, attempts have occasionally been made to design elementary schools on two floors, but generally such attempts have involved the sacrifice of *direct* cross-ventilation in the classrooms on the lower floor. In some cases the corridors have been ceiled at a height of about 8 ft. 3 in., and the space between this ceiling and the first-floor corridor has been used to form ducts from the classrooms to the outer walls of the corridor, but



these ducts cannot be considered as at all satisfactory substitutes for classroom windows opening directly into the open air. Another solution is to make the corridors on both floors in the form of open verandahs, as was done in the first premiated design in the recent Southend secondary school competition. (See *The Builder*, December 22 last.)

Acceptable as these open verandahs may be in some districts, they are unsuitable in others. Three-quarters of the population are situated north of Derby, where the prevalence of low temperatures and fog is very much greater than in the more southerly counties. It is further sometimes forgotten that the schools are closed during the warmest period of the year. The introduction of open verandahs in schools for our most densely populated districts, such as Lancashire and the West Riding of Yorkshire, is open to serious objection. In any case, the usual type of plan in which the major portion of the building is only "one-room-and-a-corridor-thick" is not an economical type, either structurally or from the point of view of upkeep.

The necessity for the most rigid economy demands that the elongated type of plan lately in vogue must be abandoned in favour of a more compact scheme. That the nearer to a cube the shape of a building is, the more economical it is, constitutes so elementary a truth that it ought not to require elaboration. The benefits resulting from the provision of direct cross-ventilation in all classrooms have become so generally appreciated that abandonment of this feature is not to be thought of, and any very close approximation to the cube in the form of a school building therefore becomes impossible. It may be well, nevertheless, to experiment with a view to reducing the length of the plan as much as possible whilst at the same time retaining facilities for cross-ventilating every room that is ordinarily used as a classroom.

Two matters well calculated to aid us toward this end are, first, the possibility of adopting a two-storied building, and second, the possibility of utilising both sides of the corridors instead of only one side, as has been done in most recent examples.

As a basis for experiment the writer has taken two typical instances of elementary schools in different places, both of which were approved by the Board of Education in the early days of the war, and endeavoured to produce a scheme fulfilling all the requisite conditions but aiming at a much more economical form of structure. The accompanying diagrams illustrate the lines upon which the solutions developed.

The portion of the site which would be covered by the building illustrated sloped downwards from west to east about 3 ft., but on the remainder of the site there was a steeper gradient; hence the desirability for a short plan such as can only be obtained by the adoption of a two-storied building. Careful measurement demonstrates that the suggested scheme is more economical than the one officially approved to the extent of a saving of 50 per cent. in external walls, 30 per cent. in roofing, and 25 per cent. in cubic contents. The estimated cost of the two schemes should not be based on the same rate per foot cube, because the saving in connection with the heating installation, plumbers' work, etc., is alone sufficient to account for at least a penny per foot cube. Apart from the more economical type of heating installation that would be ample for the suggested scheme, the difference in fuel consumption necessary would be considerable.

It is not suggested that school buildings planned on the lines illustrated would, in all respects, as nearly approach the ideal as the more orthodox type. The solution is merely put forward as an attempt to arrive at a more economical form of structure that will meet all the newer demands that are of real importance. A nation that has to devote one-third of its total income to rates and taxes cannot hope for recovery in the material sense if the burden is to be increased.

To stress the consideration of purely materialistic issues is to lay oneself open to the accusation of being anti-social in outlook; but, as Mr. Hilaire Belloc hinted in the December issue of *Architecture*, without recovery in the materialistic sense there is a grave danger of entire social collapse. Materialistic recovery is a pre-requisite to any further social progress.

Those who have the improvement of social amenities most at heart will only impede the attainment of their desires by failing to recognise the preliminary necessity of an improved condition of national finance and by refusing to submit to the inevitable restrictions thereby involved.

ACOUSTICS OF LARGE CONCERT ROOMS.

WE have received the following letter from Mr. H. Bagenal, A.R.I.B.A.:—

SIR,—In reply to questions on the above subject, may I outline briefly the main facts which have emerged as a result of acoustic research upon this class of auditory during recent years. The problem of reverberation where music is concerned is different to that for the speaking voice. In the case of the speaking voice as short a reverberation as is consistent with loudness is desirable; where music is concerned a reverberation of at least two seconds is necessary in order to secure adequate tone for strings and voices. Now the absorption necessary to ensure two seconds' reverberation is generally provided for by the relatively large audiences common to concert rooms and opera houses. Consider a concert-room seating 2,000. A rough preliminary calculation will show that such an audience will provide $2{,}000 \times 4.7 = 9{,}400$ units of absorption. In order to secure a reverberation of two seconds this involves a minimum air volume of 376,000 cu. ft. But other factors, such as stage scenery, carpets, drapery will also contribute slightly to the total absorption. This means that for music the figure, 376,000 cu. ft., is on the small side. If, on calculating and adding in all the factors using Sabine's formula (as recently explained by Mr. G. A. Sutherland in his lectures at University College, published in the architectural press), it is found that the reverberation is considerably less than two seconds, dissatisfaction in regard both to the tone and loudness of instruments and of voices is sure to result unless a considerable amount of wood panelling is used near the source of sound. The effect of wood panelling is to brighten the tone of instruments by absorbing sound in the lower rather than in the upper register and thereby relatively increasing the power of over-tones. Also wood surfaces, owing to resonance, increase loudness where they are in contact with or placed very near to a musical instrument. Thus, the wood floor of a platform or orchestra pit having a 6 in. air space below it will reinforce notes of average pitch for instruments in contact with the floor, such as piano, double bass, 'cello, solo voice. In the case of a platform, if the floor is tightly jointed to the panelling of the platform recess, so as to make one continuous wood area, the reinforcing effect is likely to be greater. The 6 in. air-space under the floor can be either continuous or divided into compartments by floor joists; the conditions are fulfilled by 6 in. floor joists laid upon a concrete floor. The reinforcing of double basses and 'cellos by some such means as this is important. Halls suitable to the speaking voice, owing to their short reverberation, are frequently dull and lifeless for orchestral and choral music and inaudible for 'cellos, double basses, and the larger organ-pipes.

In regard to shape a good acoustic plan for this class of auditory has certainly emerged. This is the fan shape with a portion of the splay to right and left of platform turned over to form a deep proscenium arch. This plan has been developed in America for combined concert and cinema auditories. The splays both of vertical and horizontal section form useful reflecting surfaces and should be hard and smooth. They are diminished in their usefulness if they are broken for the insertion of boxes. Up to a level of 8 or 10 ft. above the stage floor they should be unbroken, but doors can be shown in them. The fan shape has developed naturally, as far as acoustics is concerned, from the principle of directing sound with as few reflections as possible from the neighbourhood of the source to the neighbourhood of the audience. For this reason the splays require to be hard reflectors and not soft absorbers. Sound paths vary in efficiency. From a crowded platform, horizontal sound paths are interrupted and lessened in efficiency by neighbouring human beings. On the other hand, the vertical sound path rising from each instrument rapidly disengages and preserves its intensity. Hence, the great importance of the overhead portion of the proscenium splay. Sound reflected from the overhead portion of the splay will penetrate under the galleries at a more efficient angle than will sound reflected from the horizontal plane of the ceiling. The depth of penetration of these proscenium reflections under the gallery should mark the limit of the rear seats on the floor below.

The rear wall of an organ chamber can with advantage be tilted forwards, thereby deflecting sound downwards; the rear wall of an orchestra pit can with advantage be tilted backwards, thereby deflecting sound upwards. The galleries should be at as great a rake as possible, so that direct sound from the speaker's mouth shall reach each listener at as wide an angle of incidence as possible. Sound traversing human heads at a narrow angle dies away at a considerably greater rate than in proportion to the square of the distance from the source. Hence, deep galleries, the rear seats of which are screened from useful reflecting sources, and having nothing to rely upon but the direct sound, naturally suffer from insufficient loudness and lack of tone. Conversely, a chief feature in the Greek theatre and Bayreuth theatre types is the efficient rake of the seats and the full advantage taken thereby of the direct sound.

Having directed the bulk of the sound upon the audience, it remains to prevent reflections back from rear walls behind the audience. This can be done by a frieze of acoustic felt, acoustic tiles or plaster. In a modern acoustically designed hall there need be no more than a very small area on the back wall that will prove dangerous and will require to be eliminated. Where curves are used either on plan or section the lengths of the radius of the curve must be carefully considered. The arc of a curved ceiling must have a radius considerably greater than the height of the hall. The curves of coves must have a radius considerably smaller than the length of any possible sound path in the room. This is in order to prevent concentration of sounds from curved surfaces to focal points which might result in echoes. Echoes are caused not merely by long reflected paths, but also by bringing sound to a focus at the level of seats. It is important in large concert rooms, as in cinema halls, not to include the expensive seats in the front rows next the platform. Nothing is more annoying than to pay a high price for a seat at the end of a front row and to hear the whole performance astigmatically. A distance of at least 20 or 30 feet back is required for an equal assembling of sounds from all instruments upon the ear.

Good examples of concert rooms showing acoustic design are as follows:—New Orchestra Hall, Boston, Sabine's "Collected Papers," p360; Mill Memorial Auditorium, University of Michigan, *Brickbuilder*, August, 1913; Smith Memorial School of Music, Illinois University, *Archit. Forum*, November, 1921; Eastman Theatre and School of Music, *American Architect*, February 28, 1923.

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ILLUSTRATIONS.

Horton Priory, Kent.

The plans and photographs of Horton Priory, some of which have been exhibited at the Royal Academy, illustrate the mansion created by slight alterations and considerable additions to what remained of the old Cluniac Priory of Horton. Of the Priory, practically all that is left is the range of buildings which bounded the Cloister garth on the west, and a small portion of the west end of the church. Latterly, until 1913, these buildings had been occupied for many years as a farm-house, and a large barn and other outbuildings had been constructed out of stone and timbers from the old Priory. Fortunately, much interesting old work remained, and the recent work has been carried out so as to preserve and show the old to best advantage.

The most noticeable features of Norman date are the beautiful south jamb and part of the arch of the west door of the church, the complete west window of the south aisle of the church, the newel stair at the west end of the church with its doorway from the south aisle, the doorway which gave access to the western range of buildings, and a series of six pilaster buttresses which Rickman considered unique.

This western range of buildings was originally of one-story, and parts of the Norman windows are still to be seen. At a later date a floor was introduced so as to provide another story, and at the same time a beautiful range of traceried windows was introduced in the west wall.

Some time after the suppression of the smaller religious houses by Henry VIII, a small but interesting addition was made at the north end of this range of buildings, fragments of stone, wrought and otherwise, taken apparently from the church, being used in picturesque confusion, including a small portion of a large traceried window, and there is even some half-timbered work. The south end of the block was enclosed by a rough modern brick wall, slight remains of stone buttresses being left at the south-west corner. A new stone wall has been substituted here, with a two-story square bay window. A new main entrance is placed at the north end of the old building, the ancient Norman doorway thus becoming the door of the inner hall.

From the inner hall one passes under another Norman arch into a gallery or wide corridor, having the new main stairs at its north and a garden entrance at its south end. This gallery, which is repeated on the upper floor, gives access to all the rooms in the old part of the building and to the two new wings. There is extensive cellarage under the north wing, and servants' bedrooms occupy the second floor.

An interesting sitting room has been contrived in the roof at the north end of the old buildings, reached by a stair from the upper gallery and also from the ancient newel stair. The massive oak timber framing of the old roof is seen to advantage in this room.

The walls are faced with Kentish ragstone, with Hartham Park stone from the Yockney & Hartham Park Company's quarries for all the wrought work, admirably wrought in the old way by the company's masons.

In addition to the mansion, a lodge and cottages, stabling, garage, house for electric light plant, and greenhouses were built. During the progress of the works capitals and bases from the cloister arcade and other interesting fragments of old work were unearthed.

Messrs. Henry Knight & Son, of London, were the general contractors for the whole of the work, and the sub-contractors were: William Beattie, of London (plumbing); John Hall & Sons (Bristol and London), Ltd. (casements and leaded lights); R. A. Lister & Co., Ltd., London (electric lighting plant); Keeble, Ltd., London (electric light fittings, main staircase, and pannelling of dining room walls); William Boby, London (water softening plant); Waygood-Otis, Ltd. (lift); Benham & Sons, Ltd. (heating system); Webster, Folkestone (bells); John Tann, Ltd. (strong-room door).

The architect is Mr. George Hornblower, F.R.I.B.A., of 2, Devonshire-terrace, Portland-place, W.C.1. The late Mr. W. Whitehead acted as clerk of the works.

St. Andrew's Church and Priest's House, Rothesay.

The church of St. Andrew's is now nearing completion at Rothesay, Island of Bute. The building occupies a commanding site of about 250 ft. in Columskil-street, in the centre of the town. The style is Norman, the building having semi-circular arches and circular piers. The nave has a space of 30 ft., and provides seating accommodation for about 800 persons. A processional aisle is carried round the entire church. It is separated from the nave by an arcade of Norman arches, with a clerestory above. There are two side chapels, a large sanctuary, and a baptistry. A cloister passage leads to sacristies and to the priest's house. This latter building is of one-story, while all the rooms are arranged so that they give off the cloister. In the centre is the cloister garden. The walls of the church and other buildings are of concrete blocks with a face of crushed red sandstone hand dressed, giving the appearance of hewn stone. The church has an open timber roof and is covered with thick slates. The floors are of tiles and of wood blocks. All the doors and furnishings are of oak. The cost of the building will be about £27,000.

The contractors are:—Builder work: Messrs. George Reid & Son, Catrine; joiner work: Messrs. A. Thom & Son, St. Andrews; plumber work: Messrs. Barton & Son, Edinburgh; plaster work: Mr. R. Locke, Edinburgh; slater work: Wm. Anderson & Son, Edinburgh.

The architect is Mr. Reginald Fairlie, of Ainslie-place, Edinburgh.

MEETINGS.

Monday, *March* 26.

Architectural Association.—Mr. Maurice E. Webb on "As Others See Us." Exhibition of Executed Work by Past Students of the A.A. Schools. At 35, Bedford-square, W.C.2. 7 p.m.

Tuesday, *March* 27.

Illuminating Engineering Society.—Mr. P. J. Waldram and Mr. J. M. Waldram on "Window Design and the Measurement and Predetermination of Daylight Illumination" (Joint discussion with the Royal Institute of British Architects and the Surveyors' Institution). At the Royal Society of Arts, John-street. 8 p.m.

Wednesday, *March* 28.

Northern Architectural Association.—Annual General Meeting.

Thursday, *March* 29.

Edinburgh Architectural Association.—Annual General Meeting.

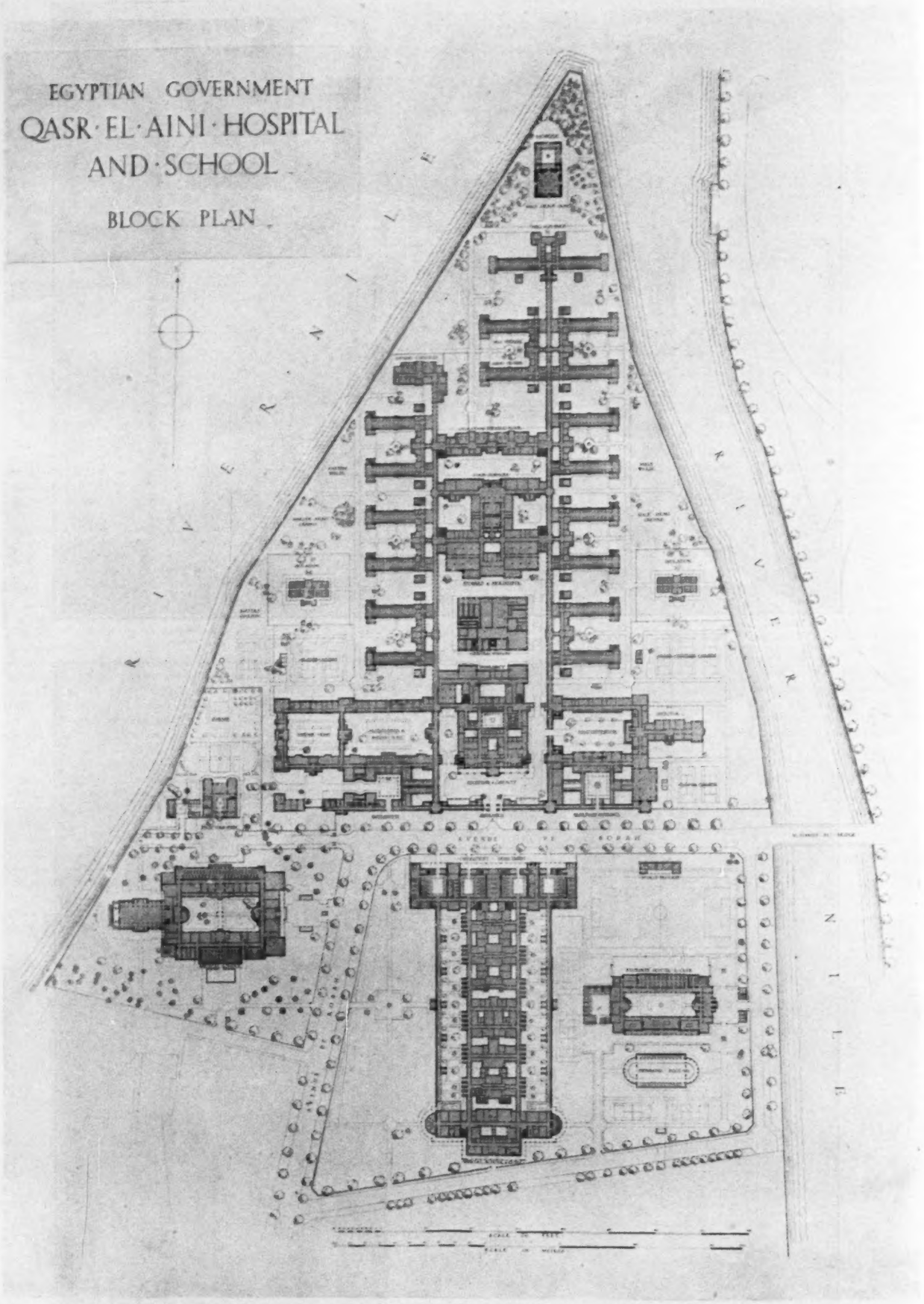
GARAGE AND STABLE. THE LODGE.

Horton Priory, Kent. Mr. George Hornblower, F.R.I.B.A., Architect.

INNER HALL.

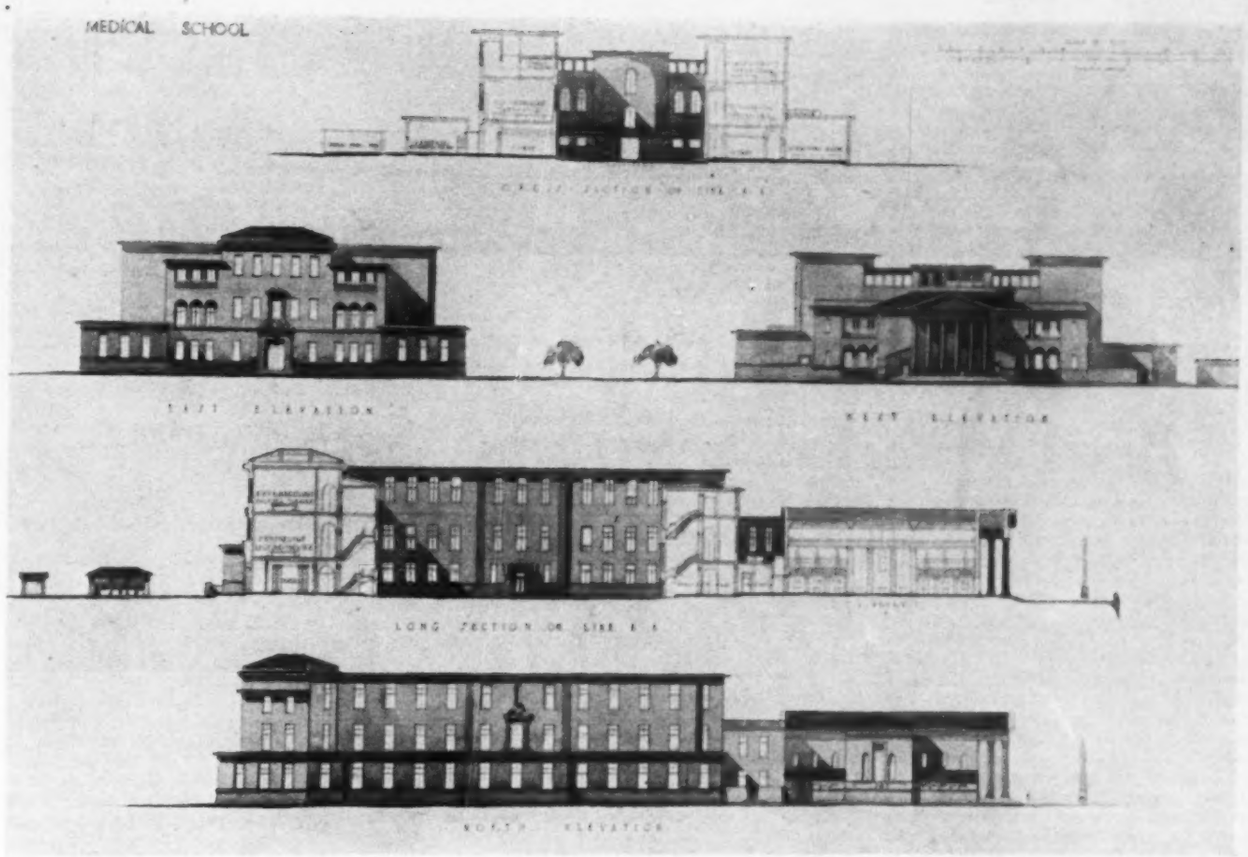
VIEW FROM NORTH-WEST.

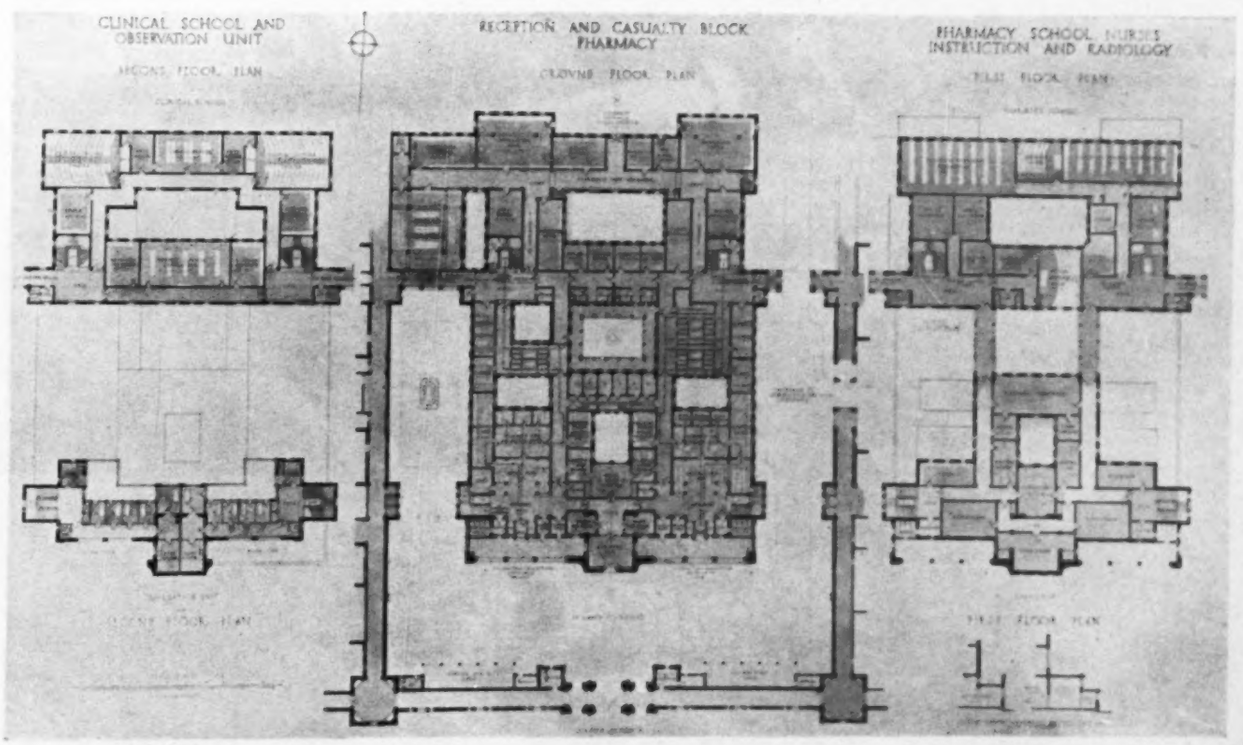
Horton Priory, Kent. Mr. George Hornblower, F.R.I.B.A., Architect. (*See p.* 48[illegible])



Design submitted by Messrs. W. A. Pite, Son, & Fairweather.

[The first and second premiated designs in this competition, by Messrs. C. Nicholas & J. E. Dixon-Spain and Messrs. Lanchester, Rickards, Lucas & Lodge, respectively, were illustrated in our last issue.]

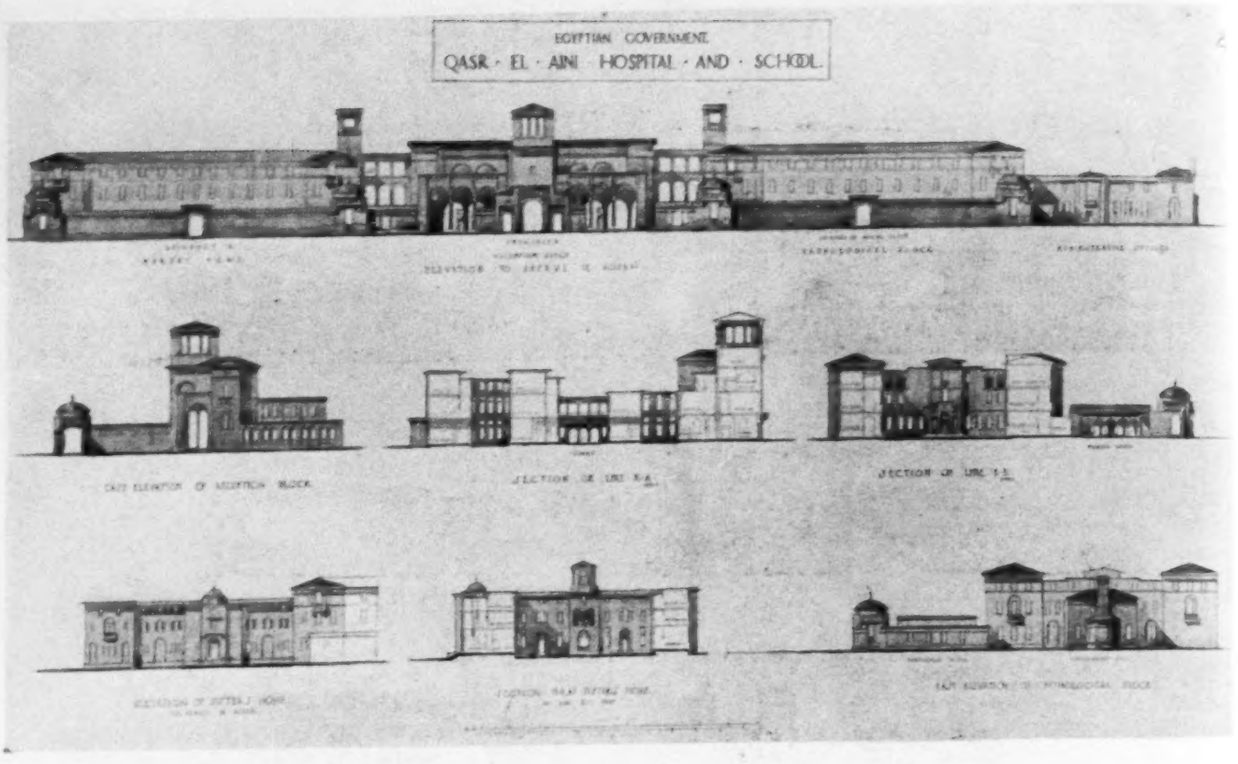


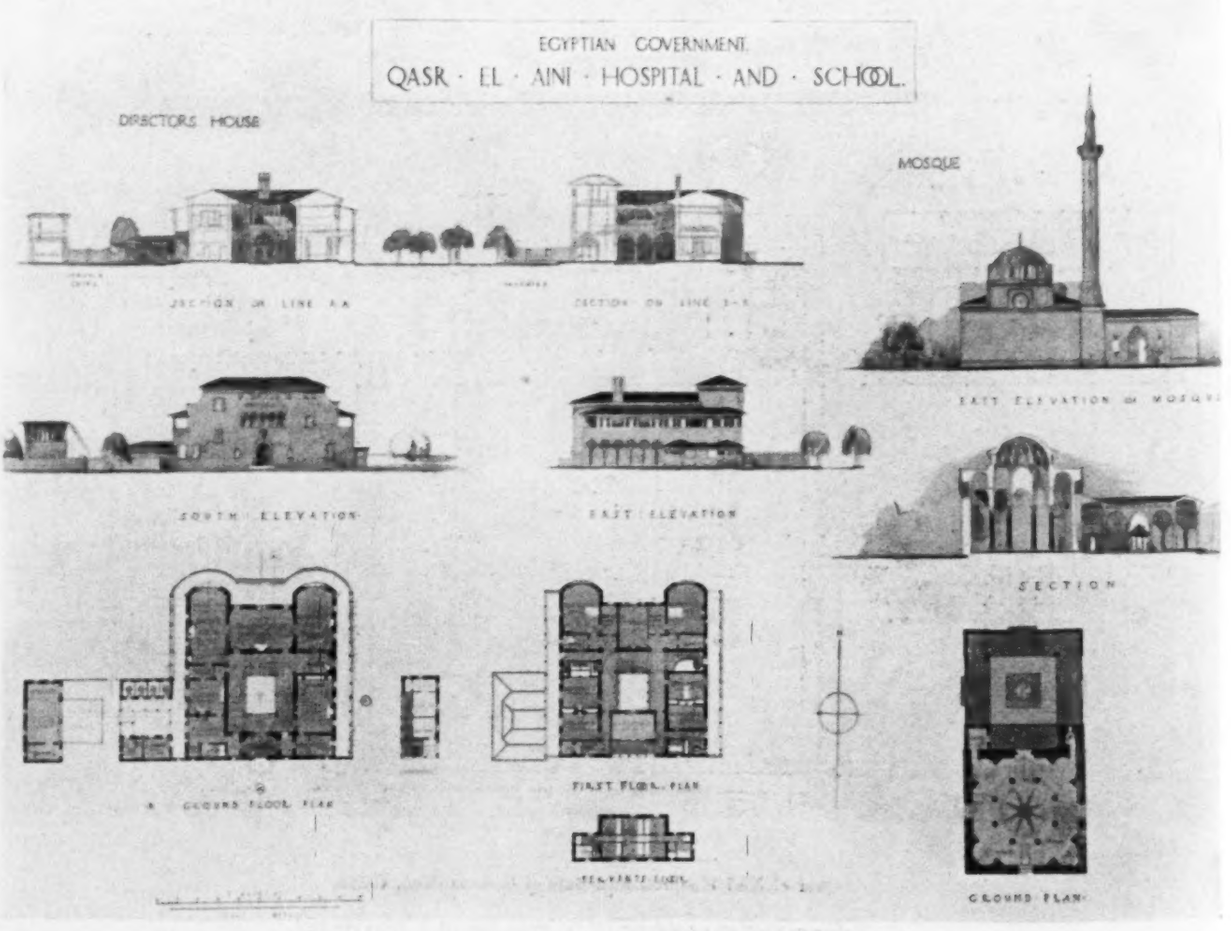

CLINICAL SCHOOL AND OBSERVATION UNIT
RECEPTION AND CASUALTY BLOCK PHARMACY
PHARMACY SCHOOL NURSES INSTRUCTION AND RADIOLOGY

Qasr el Aini Hospital and School Competition, Cairo.

Design submitted by Messrs. W. A. Pite, Son, & Fairweather.

[The first and second premiated designs in this competition, by Messrs. C. Nicholas & J. E. Dixon-Spain and Messrs. Lanchester, Rickards, Lucas & Lodge, respectively, were illustrated in our last issue.]





Qasr el Aini Hospital and School Competition, Cairo.

Design submitted by MESSRS. W. A. PITE, SON, & FAIRWEATHER.

THE QASR EL AINI HOSPITAL, CAIRO

The architects of the design we publish this week are Messrs. William A. Pite, Son, & Fairweather, of Westminster, who write :—

Never has there been a competition where fundamental principles of hospital planning were more at stake than here. To depart from settled convictions in such a technical matter would be unwise. The results shown on this design are based on long convictions and experience. To fully appreciate any design in this interesting competition it is necessary to definitely state the problem and to indicate somehow the reason why. The solution without is in the selected position to be chosen for the place of the great out-patient department. The conditions left this to the discretion of the competitors who had to determine on which side of the Avenue de Rodah it should be placed.

Provision had to be made for 1,250 in-patients in which the Hareem section had to be kept entirely distinct, an out-patient department dealing with the large number of 3,000 patients per day. Throughout the plan the Hareem section had to be entirely segregated and yet effective and intimate administration for the necessary services secured, and this included an interesting theatre unit serving both sides of the Hospital. Similar principles applied equally to the Admission and Casualty Sections while the great Medical College had to be in lisaion. This design indicates a simple and direct lay-out, the Out-Patient Department being on principle placed on the south side of the Avenue de Rodah. The design, therefore, was considered after grave consideration of the problems involved from departmental needs and adopted as right; in fact, there was no other satisfactory solution than to place the Out-Patient Department where shown.

EXHIBITION NOTES.

ROYAL INSTITUTE OF WATER COLOURS.

The Institute Galleries in Piccadilly hold an attractive show of the 114th Exhibition of the Royal Institute of Painters in Water Colours. There is a large variety of subject and method, and if one could wish to see a larger number of works which carry conviction of the artist's joy in the work, and more directly obvious studies of nature we cannot deny the many signs of clever and even accomplished work. The President, Sir David Murray, gives us of his best in his poetic vision of "Ludlow" and "changing pastures"; it is all so fair and soft that one wonders if the value would not be greater by a stronger treatment of contrasting colour, but it is the work of an idealist. When we come to "The Spa, Scarborough," by Fred Taylor, we feel that the hardness of the treatment, able as it is, leaves us cold and unsatisfied. Such simple subjects as the decoratively treated "King's Langley," by E. A. Cox; "The Brittany Water Carriers," by H. Davis Richter, or "The Old Cottage," by C. Ross Burnett, make a stronger appeal to the artist. It is impossible to do justice in brief notes to the skill displayed in over 500 subjects, but we may indicate a good deal of special interest to our readers, such as the excellent little water colours from Perugia (468 and 470), by E. Guy Dawber, the telling "Zamora" (473) by H. C. Brewer, the nicely-toned interior of the "Dordrecht Kerk" (458) by Mrs. Emily M. Paterson, a clever interior of the National Gallery (431) by Miss Amy Squire, the clever sketch of St. Dunstan's Abbey (366) by R. Borlase Smart, and the fairy-like "Waterway at Genoa" (362) by A. Van Anrooy. In "The Pink Archway, Annecy" (35) and in "An Alpine Village" (65) we have Terrick Williams at his best. In Nos. 100, 103, 76, 51, 49, 20 and 22, 109, 27, 128, 144, 148, 150, 153, 189, we may see some of the works which make the exhibition a more than usually good one.

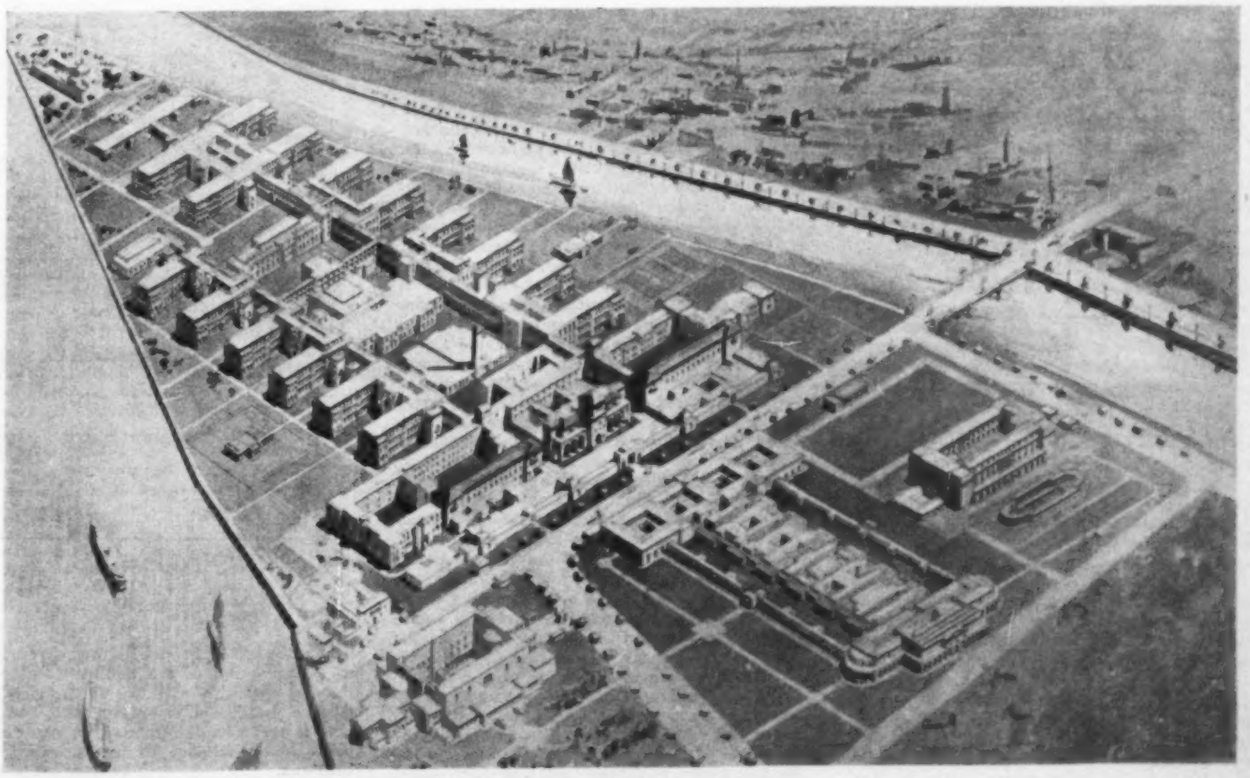
One is inclined to think that there is a too widespread effort to get more out of water-colour work than it is well to try for; in some pictures it is almost difficult to believe the result has been obtained by water-colour painting. The fine interior of York Minster (177), by Fred Taylor, is a bold essay in water colour which might perhaps have been better in many ways if executed in oils.

BOOK REVIEW.

Oils, Pigments, Paints, and Varnishes. By R. S. TRUELOVE. (Pitman & Sons, 1922.) 2s. 6d. net.

The library of the paint technician is a large one and the ever-growing works on this subject should do something to advance our knowledge of the many problems which still require solution. The present small work of 108 pages ranges over the whole subject, but contains a great deal of information between its covers. We are interested in the author's statement that resin and tung oil make a varnish comparable with a linseed oil gum copal varnish We have long felt that tung oil deserved more investigation as a paint material, and some tests upon this new varnish, which must be very cheap, seem highly desirable, more particularly if the use of non-lead paints is to be made compulsory. A chapter on drying oil paints contains illustrations of mixing machinery; while in the last chapter a short account of nitro-cellulose varnishes—products of the war, which also deserve more investigation—is given.

Those who are looking for a small work on this subject will find this volume useful.



Qasr el Aini Hospital and School Competition. Design submitted by MESSRS. W. A. PITE, SON, & FAIRWEATHER.

"THE BUILDER" COST OF BUILDING COMPETITION.

THE letters printed below have reference to *The Builder* Competition, which was assessed by Professor S. D. Adshead and the results published last week :—

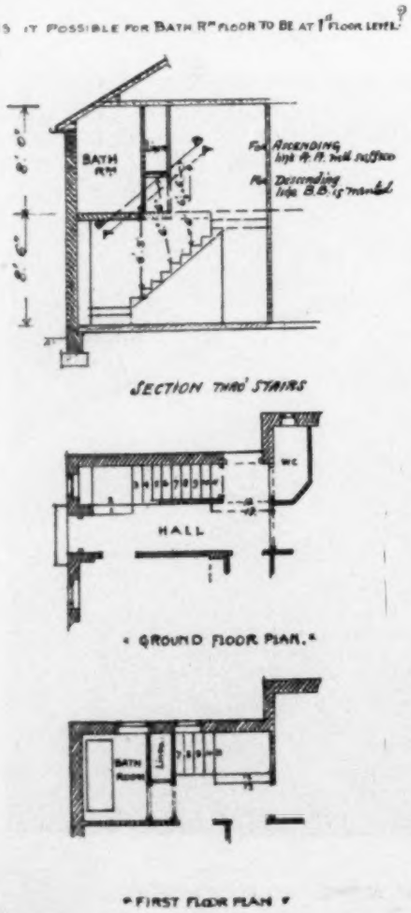
SIR,—One of the conditions of this competition stated that "a detail including staircase," &c., was required which would lead one to think that the headroom in the staircase was to be considered. In the published plan of the winning design in Class A the seventh step down of the stair passes under the linen closet, and the ninth step down comes exactly under the partition of the bathroom. The rise is a little less than 8 in., which gives headroom at linen closet 4 ft. 6 in., less 6 in. thickness of floor, and 6 ft., less 6 in., under bathroom partition, which seems to be inadequate. There may be a bulkhead in the linen closet, but there cannot be one in the bathroom.

"INTERESTED."

SIR,—I hope kindly-meant criticism will be welcomed in connection with the "Cost of Building Competition," and taken in sportsmanlike spirit, as, after the great amount of time, trouble and interest absorbed by this contest it would be a pity if we did not learn something of practical importance.

After rapidly glancing over the designs at the R.I.B.A. galleries, I came away feeling that Messrs. Sifton and Thorpe had won "hands down" by producing an extraordinarily compact plan. Since then I have pondered over the plans published in last week's *Builder*, and I was caused to hesitate, by study of the stairs and the headway over them.

I have drawn a section through the stairs of the premiated Type A plan, which, together with the affected portions of the ground and first floor plans, I attach, to explain the situation as it presents itself to me.


IS IT POSSIBLE FOR BATH RM FLOOR TO BE AT 1ST FLOOR LEVEL?
BATH RM
SECTION THRO' STAIRS
HALL
GROUND FLOOR PLAN.
FIRST FLOOR PLAN

I hope to be pardoned if I have erred in any way in my interpretation of the plans, but I take it that the third step (as nearly as it can be measured) starts 5 ft. from the outer face of the end wall. To reach number 11 step, eight treads are wanted, reckoning each to be 9 in.; this requires a going of 6 ft., bringing No. 11 riser 11 ft. from the outer face of back wall. (This distance seems to be nearer 12 ft. on the authors' first floor plan.) and renders the top landing something just over 4 ft. wide. Referring to my section, it seems that there must be an insufficiency of "headway" under the linen space and to a great part of the bathroom. It is easy enough to keep the bottom of the linen up some 3 ft. from the first floor level, and this may well be intended by the authors. But the plans, as drawn, evidently suppose the bathroom floor can readily be at the general first floor level.

To get up a height of 6 ft., vertically, from the nosing of the step to the soffit may be sufficient, but is this enough for convenient descent? As a matter of knowledge, I should very much like to know what height is really enough, and what headway should *be* provided. Many sketch plans I made which seemed delightfully compact, when drawn to scale had to be "turned down" for what I deemed an insufficiency of headway, and the remedy led to an increase of area and, of course, increase in cube, and consequently increased cost.

EDWARD A. JOLLYE, A.R.I.B.A.

[We are glad to receive our correspondent's letter.—ED.]

SIR,—I opened the last issue of your journal with great expectation; alas! that I closed it again with keen disappointment. I was not a competitor in the "Cost of Building Competition," and, therefore, write with detachment. The winners may have knowledge of living in the type of house they have designed, but their plans would lead one to doubt this being the case.

The author of Type "B" appears to have taken as his *motif* a corridor train. I am not aware of this type having been planned with the entrance to the kitchen through the scullery, and I certainly hope, for the sake of the long-suffering middle classes, that they will never be built in this fashion. The people who live in such houses, of course, do not take off their hats and coats when they come in, and visitors never call at the front door, hence the "Hall" is merely a passage. The wall-space in the scullery has been most skilfully broken up so as to avoid the necessity of providing shelves, which, of course, serve no useful purpose; and to ensure the maid's or housewife's having sufficient walking exercise indoors, the sink and water supply are arranged at a considerable distance from the cooker with the hazard of a door in between.

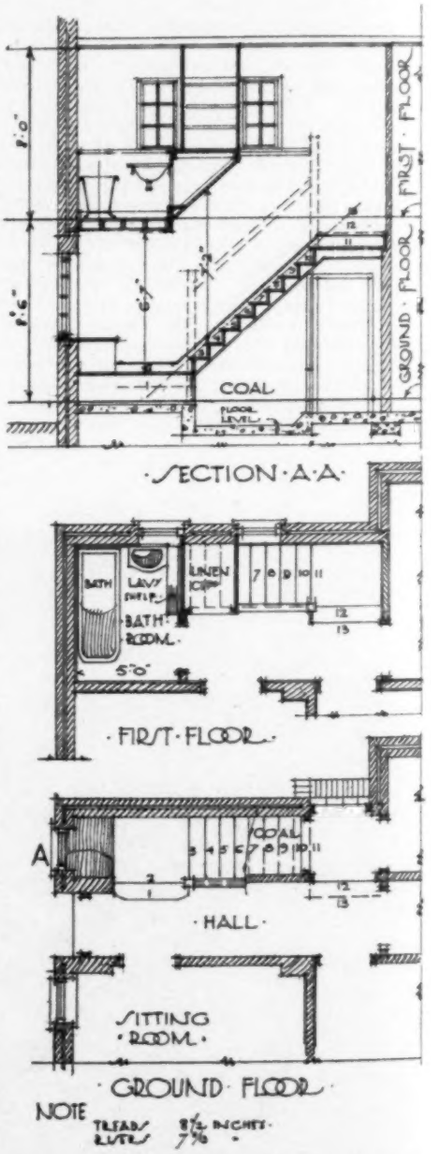
In type "A" winning design, the copper is very thoughtfully put as close to the serving hatch as possible, and incidentally as far away from the sink and water supply as possible, it being a well-known fact that the copper is always used in connection with the former and never with the latter. The real motive which inspired this position was, of course, the desire adequately to close the vista obtained from the front door. The authors have been eminently successful in their endeavour to place the bathroom as distant from the seat of hot water supply as the narrow confines of such a house will allow. Some of the competitors may be surprised at the smallness of the height from floor to floor shown by this design, but if they will look more closely they will see that the house has evidently been designed for pygmies, as the headroom on the stair is apparently only 5 ft. 4 in. These competitors also believe that one can have too much of a good thing, for they thoughtfully economise by boldly refusing to extend the damp proof course under the wall plate.

Sir, the thing is no matter for jest. When members of the Royal Institute can send in such plans and the Assessor, also a member of the Royal Institute, can choose such designs for the place of honour, it is surely time that the Institute took drastic measures to stop the rot and made an example by firing the culprits as a warning to other would-be evil doers.

Much more might be written, but already this is too long. J. GRIEVE.

[We submitted the letters printed above to the authors of the design placed first in the "A" class, and we give their reply as follows :—

We return herewith the letters which you forwarded for comments. The only criticism of the plans which calls for a reply is that relating to headroom over staircase. This was not too



clear on the one-eighth scale drawing submitted, but a completion of the half-inch scale detail sent you herewith will, we think, show that sufficient headroom is obtainable. The linen closet is over a baulkhead and the lower part of this is used as a space for cans accessible from bathroom. SIFTON & THORPE.]

[Other letters on the competition will be given next week.]

ARCHITECTURAL MEETINGS.

IS ARCHITECTURE A NECESSITY OR A LUXURY?

"Is Architecture a Necessity or a Luxury?" was the title of the fourth of the series of public lectures now being held by the Royal Institute of British Architects, at No. 9, Conduit-street, W.1, and delivered on Thursday last week by Mr. H. S. Goodhart-Rendel.

The answer to the question depended, he said, on what was meant by a luxury, and also by what was meant by architecture, and architecture was a word used to mean many different things. By necessity he meant an indispensable thing, and by "Is architecture a necessity?" he meant was architecture a thing which could be dispensed with. By "luxury" he meant a thing which was desirable but which was not indispensable. The answer to those questions depended on what was meant by architecture, and that was not an easy thing to define. Like so many other things it was so much easier to say what it was not than what it was.

In the first place architecture was not a mere mitigation of the brutalities of building. Its function was not that of clothing and adorning that which would be ugly unadorned. When it was first proposed to bridge Ludgate-hill with the railway viaduct which now blocked out the view of St. Paul's, the railway company was compelled to promise that the structure should be architectural. That promise was held to have been kept by the liberal application of scrolls and shields to the design already made by engineers. The result was not successful. Without its ornament the bridge would have been ugly; with the ornament it remained unchanged.

It was often stated that Sir Henry Wootton's "well-building" (commodity, firmness and delight) and architecture were two names for the same thing, but with that he did not agree. He could imagine no room less commodious for the purpose of holding a large number of books than the Radcliffe Library, Oxford, yet nobody would say that majestic building was not a fine work of architecture. Wootton would have considered, quite rightly the lecturer thought, that neither the Radcliffe Library nor the Alhambra were examples of "well-building"—the Radcliffe Library had not commodity and the Alhambra had not firmness, but no one could deny the claims of those buildings as architectural objects. When all was said and done the fine art of architecture was an art of appearances. True appearances were usually more desirable than false appearances, but the relation of appearances to reality was governed by considerations not strictly architectural. A building to be a good one must be convenient and strong—fit and firm; it might be that its convenience and strength would make a building beautiful, but it also might be that its convenience and strength would make it nothing of the kind. If he were told that the architecture of Queen Anne's Mansions, Westminster, was beautiful, he would advise the man who told him to consult a mental specialist, yet Queen Anne's Mansions were, he believed, quite strong and convenient. Under certain conditions of light no doubt that building could look beautiful, but that was a thing of chance and did not properly belong to a work of art. He disagreed with the theory that if a thing were perfectly adapted to its use it was entitled to be called beautiful. The Radcliffe Library, the Alhambra, and Queen Anne's Mansions each had only two of the three qualifications for "well-building"; the Radcliffe Library, which had firmness and delight, and the Alhambra, which had commodity and delight, were both works of architecture; while Queen Anne's Mansions, which had only firmness and fitness, were, he suggested, not a work of architecture.

It would seem, therefore, that the qualifications for being considered as architecture must rest in the attribute of delight, without which there could be no architecture. Delight was the essence of art—not only of the essence, but of the essence itself, for nothing else was necessary. To build soundly and reasonably was not to make architecture, although it might lay an excellent foundation for architecture. Physical needs demanded that buildings should be strong and convenient, but the emotions hungered for something more than security and comfort. It was not, however, until the physical needs were satisfied that the practice of the art of architecture was commenced.

Architecture, as he saw it, was not the art of building strongly, nor of building cleverly, nor of building economically, but the art of building beautifully. It would generally be better to have a foundation of strength, or cleverness, or of economy in a building, or of all three, but art could do without any of them. Art could exist on canvas and paint. It could occupy itself with bringing out the flavour of a building; it could use the building merely as a framework for elaborate and arbitrary arrangements of decorations, or it could, as with the Arabs, confine its attention to the arrangements and decorations and leave the framework to look after itself. He did not defend that last alternative, but he could only condemn it on grounds which were not architectural. Thoughtless people constantly said that decorated construction was a mark of good architecture and constructed decoration a mark of bad architecture—a dogma which meant either nothing at all or that every bit of tracery in a Gothic window was a sin against art. Any decoration in three dimensions had more or less to be constructed, and constructed decoration was as much an ingredient of good architecture as was decorated construction. What made bad architecture was decoration and construction visibly in conflict with one another.

In his concluding remarks, he said he hoped he had said enough to distinguish architecture from the art which most nearly resembled it—Civil engineering. Civil engineering was the erection of structures which complied with the first two of Wootton's requirements, commodity and convenience, but it was not concerned with delight—it was Queen Anne's Mansions, in fact. Civil engineering was certainly a necessity, and not a luxury, if there was not to be a relapse to barbarism. He thought it quite certain that architecture was not a necessity, and no good would be done by attempting to represent it as such. The bare necessities of life could be satisfied by civil engineering alone, but, on the other hand, it was equally certain that architecture was an inevitability—painters would automatically produce pictures and architects would produce buildings. As to whether architecture was a luxury, so long as society was divided into those who laboured for the support of others and those with leisure, the latter would spend their time in doing what they enjoyed. Architecture was not indispensable, but that did not mean that we should be called on to dispense with architects, although if all the architects in the world were shot to-morrow the world would go on with the aid of the civil engineer. But the public would demand architecture throughout the ages, and therefore he contended that it might fairly be regarded as a delightful luxury, and not as an expensive nuisance.

ARCHITECTURE AND THE STAGE.

In the course of a lecture on "Architecture and the Stage," given under the auspices of the Architecture Club, at Grosvenor House, on Thursday last week, Mr. Nigel Playfair said there was very little in the exhibition in that building to show that the theatre took the least interest in architects or the architects the slightest interest in the theatre. He did not quite know why that was. He saw there, for instance, no designs for scenery; no suggestions, or hardly any, for improvements in the designs either for stages or auditoria. It was a pity. Perhaps it was a rule of the managers of the exhibition that the works exhibited should be solely works that had been commissioned and carried out. That, if it was so, would explain much, for it was a fact that owing to the conditions that had prevailed in the last few years and the building laws practically no new theatres had been built lately. But London was said to have far too few theatres for the needs of the population, though they might be justified perhaps in thinking, considering what they saw inside most of them, there were far too many. However that might be, there was ample evidence that they were going to have a lot more, and they could only pray that the artist-architect might have a look in and help in the building of them. But if the man with a sense of beauty in design did not come forward with suggestions they could hardly blame the promoters if they gave the jobs to men who had studied the practical side of the question.

Then, again, he did not quite know why, in an exhibition of twenty years of architecture, a little corner had not been reserved for scenic design. The Committee might possibly say that those designs for scenery had not been made by architects. To that he answered that in the first place it was not strictly true; that architects in the most literal and conventional sense of the word had occasionally designed stage scenery and that, after all, any man who set out to design scenery also set out to be an architect—"a designer of complex structure," as the dictionary defined it. It seemed to him, in those hard times, that any little job that was going was worth getting. In good times or bad, the theatre seemed to be a going concern, and unless the new system of lighting did away with the necessity of scenery altogether there was the job going, and it was a job worth doing. He often wondered, when he saw a modern play where the action took place in the houses of the great, how any self-respecting architect could sit in his stall quite quietly without going into a fit at the rooms he saw upon the stage.

It was, of course, perfectly true that the fact that the action of a play took place in a room of which all the proportions were impossible, the curtains badly hung, the lines hideous, made very little difference to the enjoyment of the general public. But the general public was indifferent, or appeared to be, to decency in architecture in its public buildings and its private houses, until its right instincts were aroused by example, teaching and organisation. And he thought a little exhortation might be well given by that Club and the lovers of architecture and good taste to the theatre managers and the patrons of the public stage. It would be all to the general good.

How far the training of an architect helped a man to be a good scenic designer it was not for him to say. He had seen some thoroughly bad scenery designed by a thoroughly good architect; once, on a country walk, he came across a house designed by a famous scenic artist, and that was much worse. Though scene designing might seem a very trifling and ephemeral business, it was not one to be lightly undertaken; it required, like every other business, a long and arduous apprenticeship if the designer was to master all the details of the effects and the defects of lighting—of the conventions and limitations, and, above all, the necessary economies of the theatre, becoming every day more and more pressing. And the most difficult job of all that he had to face was translating, as it were, the conventions of a play designed for one sort of conditions into the conditions of a stage designed principally to deal with conventions and conditions of quite another kind. That was where they were all so apt to go wrong.

Whether, of course, it was worth the while of architects to devote any part of their studies to the intricate details of stage design and theatre design from a strictly commercial point of view was, of course, another question, to which he did not feel able to give any very satisfactory answer. At first sight, indeed, the field would

"THE BUILDER" COST OF BUILDING COMPETITION.

The letters printed below have reference to *The Builder* Competition, which was assessed by Professor S. D. Adshead and the results published last week :—

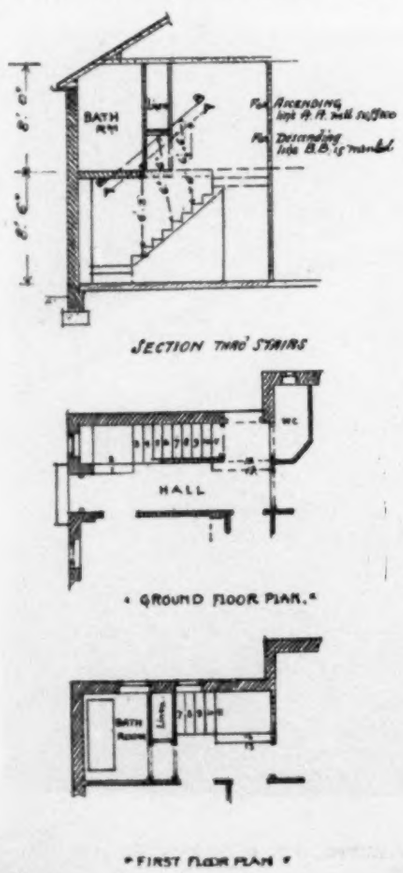
Sir,—One of the conditions of this competition stated that "a detail including staircase," &c., was required which would lead one to think that the headroom in the staircase was to be considered. In the published plan of the winning design in Class A the seventh step down of the stair passes under the linen closet, and the ninth step down comes exactly under the partition of the bathroom. The rise is a little less than 8 in., which gives headroom at linen closet 4 ft. 6 in., less 6 in. thickness of floor, and 6 ft., less 6 in., under bathroom partition, which seems to be inadequate. There may be a bulkhead in the linen closet, but there cannot be one in the bathroom.

"Interested."

Sir,—I hope kindly-meant criticism will be welcomed in connection with the "Cost of Building Competition," and taken in sportsmanlike spirit, as, after the great amount of time, trouble and interest absorbed by this contest it would be a pity if we did not learn something of practical importance.

After rapidly glancing over the designs at the R.I.B.A. galleries, I came away feeling that Messrs. Sifton and Thorpe had won "hands down" by producing an extraordinarily compact plan. Since then I have pondered over the plans published in last week's *Builder*, and I was caused to hesitate, by study of the stairs and the headway over them.

I have drawn a section through the stairs of the premiated Type A plan, which, together with the affected portions of the ground and first floor plans, I attach, to explain the situation as it presents itself to me.



I hope to be pardoned if I have erred in any way in my interpretation of the plans, but I take it that the third step (as nearly as it can be measured) starts 5 ft. from the outer face of the end wall. To reach number 11 step, eight treads are wanted, reckoning each to be 9 in.; this requires a going of 6 ft., bringing No. 11 riser 11 ft. from the outer face of back wall. (This distance seems to be nearer 12 ft. on the authors' first floor plan.) and renders the top landing something just over 4 ft. wide. Referring to my section, it seems that there must be an insufficiency of "headway" under the linen space and to a great part of the bathroom. It is easy enough to keep the bottom of the linen up some 3 ft. from the first floor level, and this may well be intended by the authors. But the plans, as drawn, evidently suppose the bathroom floor can readily be at the general first floor level.

To get up a height of 6 ft., vertically, from the nosing of the step to the soffit may be sufficient, but is this enough for convenient descent? As a matter of knowledge, I should very much like to know what height is really enough, and what headway should *be* provided. Many sketch plans I made which seemed delightfully compact, when drawn to scale had to be "turned down" for what I deemed an insufficiency of headway, and the remedy led to an increase of area and, of course, increase in cube, and consequently increased cost.

Edward A. Jollye, A.R.I.B.A.

[We are glad to receive our correspondent's letter.—Ed.]

Sir,—I opened the last issue of your journal with great expectation; alas! that I closed it again with keen disappointment. I was not a competitor in the "Cost of Building Competition," and, therefore, write with detachment. The winners may have knowledge of living in the type of house they have designed, but their plans would lead one to doubt this being the case.

The author of Type "B" appears to have taken as his *motif* a corridor train. I am not aware of this type having been planned with the entrance to the kitchen through the scullery, and I certainly hope, for the sake of the long-suffering middle classes, that they will never be built in this fashion. The people who live in such houses, of course, do not take off their hats and coats when they come in, and visitors never call at the front door, hence the "Hall" is merely a passage. The wall-space in the scullery has been most skilfully broken up so as to avoid the necessity of providing shelves, which, of course, serve no useful purpose; and to ensure the maid's or housewife's having sufficient walking exercise indoors, the sink and water supply are arranged at a considerable distance from the cooker with the hazard of a door in between.

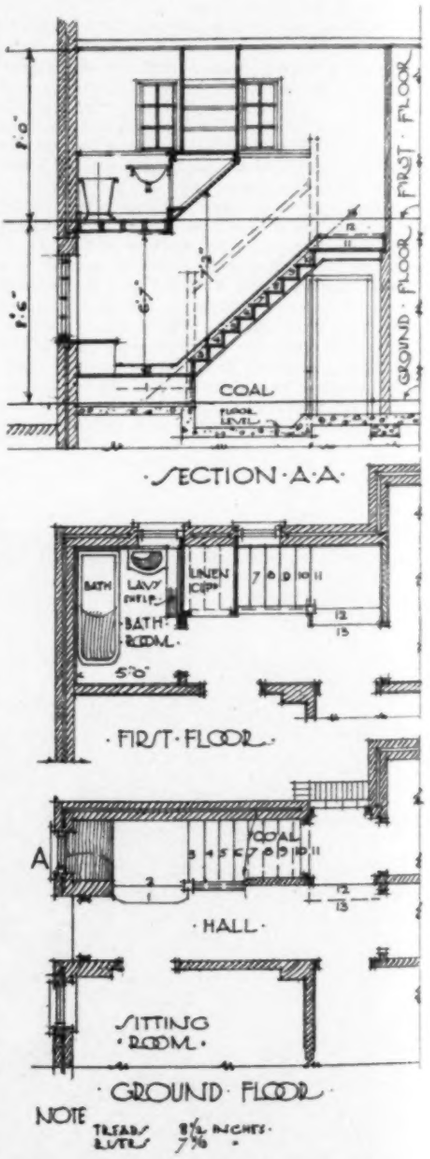
In type "A" winning design, the copper is very thoughtfully put as close to the serving hatch as possible, and incidentally as far away from the sink and water supply as possible, it being a well-known fact that the copper is always used in connection with the former and never with the latter. The real motive which inspired this position was, of course, the desire adequately to close the vista obtained from the front door. The authors have been eminently successful in their endeavour to place the bathroom as distant from the seat of hot water supply as the narrow confines of such a house will allow. Some of the competitors may be surprised at the smallness of the height from floor to floor shown by this design, but if they will look more closely they will see that the house has evidently been designed for pygmies, as the headroom on the stair is apparently only 5 ft. 4 in. These competitors also believe that one can have too much of a good thing, for they thoughtfully economise by boldly refusing to extend the damp proof course under the wall plate.

Sir, the thing is no matter for jest. When members of the Royal Institute can send in such plans and the Assessor, also a member of the Royal Institute, can choose such designs for the place of honour, it is surely time that the Institute took drastic measures to stop the rot and made an example by firing the culprits as a warning to other would-be evil doers.

Much more might be written, but already this is too long. J. Grieve.

[We submitted the letters printed above to the authors of the design placed first in the "A" class, and we give their reply as follows :—

We return herewith the letters which you forwarded for comments. The only criticism of the plans which calls for a reply is that relating to headroom over staircase. This was not too



clear on the one-eighth scale drawing submitted, but a completion of the half-inch scale detail sent you herewith will, we think, show that sufficient headroom is obtainable. The linen closet is over a baulkhead and the lower part of this is used as a space for cans accessible from bathroom. Sifton & Thorpe.]

[Other letters on the competition will be given next week.]

ARCHITECTURAL MEETINGS.

IS ARCHITECTURE A NECESSITY OR A LUXURY?

"Is Architecture a Necessity or a Luxury?" was the title of the fourth of the series of public lectures now being held by the Royal Institute of British Architects, at No. 9, Conduit-street, W.1, and delivered on Thursday last week by Mr. H. S. Goodhart-Rendel.

The answer to the question depended, he said, on what was meant by a luxury, and also by what was meant by architecture, and architecture was a word used to mean many different things. By necessity he meant an indispensable thing, and by "Is architecture a necessity?" he meant was architecture a thing which could be dispensed with. By "luxury" he meant a thing which was desirable but which was not indispensable. The answer to those questions depended on what was meant by architecture, and that was not an easy thing to define. Like so many other things it was so much easier to say what it was not than what it was.

In the first place architecture was not a mere mitigation of the brutalities of building. Its function was not that of clothing and adorning that which would be ugly unadorned. When it was first proposed to bridge Ludgate-hill with the railway viaduct which now blocked out the view of St. Paul's, the railway company was compelled to promise that the structure should be architectural. That promise was held to have been kept by the liberal application of scrolls and shields to the design already made by engineers. The result was not successful. Without its ornament the bridge would have been ugly; with the ornament it remained unchanged.

It was often stated that Sir Henry Wootton's "well-building" (commodity, firmness and delight) and architecture were two names for the same thing, but with that he did not agree. He could imagine no room less commodious for the purpose of holding a large number of books than the Radcliffe Library, Oxford, yet nobody would say that majestic building was not a fine work of architecture. Wootton would have considered, quite rightly the lecturer thought, that neither the Radcliffe Library nor the Alhambra were examples of "well-building"—the Radcliffe Library had not commodity and the Alhambra had not firmness, but no one could deny the claims of those buildings as architectural objects. When all was said and done the fine art of architecture was an art of appearances. True appearances were usually more desirable than false appearances, but the relation of appearances to reality was governed by considerations not strictly architectural. A building to be a good one must be convenient and strong—fit and firm; it might be that its convenience and strength would make a building beautiful, but it also might be that its convenience and strength would make it nothing of the kind. If he were told that the architecture of Queen Anne's Mansions, Westminster, was beautiful, he would advise the man who told him to consult a mental specialist, yet Queen Anne's Mansions were, he believed, quite strong and convenient. Under certain conditions of light no doubt that building could look beautiful, but that was a thing of chance and did not properly belong to a work of art. He disagreed with the theory that if a thing were perfectly adapted to its use it was entitled to be called beautiful. The Radcliffe Library, the Alhambra, and Queen Anne's Mansions each had only two of the three qualifications for "well-building"; the Radcliffe Library, which had firmness and delight, and the Alhambra, which had commodity and delight, were both works of architecture; while Queen Anne's Mansions, which had only firmness and fitness, were, he suggested, not a work of architecture.

It would seem, therefore, that the qualifications for being considered as architecture must rest in the attribute of delight, without which there could be no architecture. Delight was the essence of art—not only of the essence, but of the essence itself, for nothing else was necessary. To build soundly and reasonably was not to make architecture, although it might lay an excellent foundation for architecture. Physical needs demanded that buildings should be strong and convenient, but the emotions hungered for something more than security and comfort. It was not, however, until the physical needs were satisfied that the practice of the art of architecture was commenced.

Architecture, as he saw it, was not the art of building strongly, nor of building cleverly, nor of building economically, but the art of building beautifully. It would generally be better to have a foundation of strength, or cleverness, or of economy in a building, or of all three, but art could do without any of them. Art could exist on canvas and paint. It could occupy itself with bringing out the flavour of a building; it could use the building merely as a framework for elaborate and arbitrary arrangements of decorations, or it could, as with the Arabs, confine its attention to the arrangements and decorations and leave the framework to look after itself. He did not defend that last alternative, but he could only condemn it on grounds which were not architectural. Thoughtless people constantly said that decorated construction was a mark of good architecture and constructed decoration a mark of bad architecture—a dogma which meant either nothing at all or that every bit of tracery in a Gothic window was a sin against art. Any decoration in three dimensions had more or less to be constructed, and constructed decoration was as much an ingredient of good architecture as was decorated construction. What made bad architecture was decoration and construction visibly in conflict with one another.

In his concluding remarks, he said he hoped he had said enough to distinguish architecture from the art which most nearly resembled it—Civil engineering. Civil engineering was the erection of structures which complied with the first two of Wootton's requirements, commodity and convenience, but it was not concerned with delight—it was Queen Anne's Mansions, in fact. Civil engineering was certainly a necessity, and not a luxury, if there was not to be a relapse to barbarism. He thought it quite certain that architecture was not a necessity, and no good would be done by attempting to represent it as such. The bare necessities of life could be satisfied by civil engineering alone, but, on the other hand, it was equally certain that architecture was an inevitability—painters would automatically produce pictures and architects would produce buildings. As to whether architecture was a luxury, so long as society was divided into those who laboured for the support of others and those with leisure, the latter would spend their time in doing what they enjoyed. Architecture was not indispensable, but that did not mean that we should be called on to dispense with architects, although if all the architects in the world were shot to-morrow the world would go on with the aid of the civil engineer. But the public would demand architecture throughout the ages, and therefore he contended that it might fairly be regarded as a delightful luxury, and not as an expensive nuisance.

ARCHITECTURE AND THE STAGE.

In the course of a lecture on "Architecture and the Stage," given under the auspices of the Architecture Club, at Grosvenor House, on Thursday last week, Mr. Nigel Playfair said there was very little in the exhibition in that building to show that the theatre took the least interest in architects or the architects the slightest interest in the theatre. He did not quite know why that was. He saw there, for instance, no designs for scenery; no suggestions, or hardly any, for improvements in the designs either for stages or auditoria. It was a pity. Perhaps it was a rule of the managers of the exhibition that the works exhibited should be solely works that had been commissioned and carried out. That, if it was so, would explain much, for it was a fact that owing to the conditions that had prevailed in the last few years and the building laws practically no new theatres had been built lately. But London was said to have far too few theatres for the needs of the population, though they might be justified perhaps in thinking, considering what they saw inside most of them, there were far too many. However that might be, there was ample evidence that they were going to have a lot more, and they could only pray that the artist-architect might have a look in and help in the building of them. But if the man with a sense of beauty in design did not come forward with suggestions they could hardly blame the promoters if they gave the jobs to men who had studied the practical side of the question.

Then, again, he did not quite know why, in an exhibition of twenty years of architecture, a little corner had not been reserved for scenic design. The Committee might possibly say that those designs for scenery had not been made by architects. To that he answered that in the first place it was not strictly true; that architects in the most literal and conventional sense of the word had occasionally designed stage scenery and that, after all, any man who set out to design scenery also set out to be an architect—"a designer of complex structure," as the dictionary defined it. It seemed to him, in those hard times, that any little job that was going was worth getting. In good times or bad, the theatre seemed to be a going concern, and unless the new system of lighting did away with the necessity of scenery altogether there was the job going, and it was a job worth doing. He often wondered, when he saw a modern play where the action took place in the houses of the great, how any self-respecting architect could sit in his stall quite quietly without going into a fit at the rooms he saw upon the stage.

It was, of course, perfectly true that the fact that the action of a play took place in a room of which all the proportions were impossible, the curtains badly hung, the lines hideous, made very little difference to the enjoyment of the general public. But the general public was indifferent, or appeared to be, to decency in architecture in its public buildings and its private houses, until its right instincts were aroused by example, teaching and organisation. And he thought a little exhortation might be well given by that Club and the lovers of architecture and good taste to the theatre managers and the patrons of the public stage. It would be all to the general good.

How far the training of an architect helped a man to be a good scenic designer it was not for him to say. He had seen some thoroughly bad scenery designed by a thoroughly good architect; once, on a country walk, he came across a house designed by a famous scenic artist, and that was much worse. Though scene designing might seem a very trifling and ephemeral business, it was not one to be lightly undertaken; it required, like every other business, a long and arduous apprenticeship if the designer was to master all the details of the effects and the defects of lighting—of the conventions and limitations, and, above all, the necessary economies of the theatre, becoming every day more and more pressing. And the most difficult job of all that he had to face was translating, as it were, the conventions of a play designed for one sort of conditions into the conditions of a stage designed principally to deal with conventions and conditions of quite another kind. That was where they were all so apt to go wrong.

Whether, of course, it was worth the while of architects to devote any part of their studies to the intricate details of stage design and theatre design from a strictly commercial point of view was, of course, another question, to which he did not feel able to give any very satisfactory answer. At first sight, indeed, the field would

seem to be a very restricted one. But then, so did the field for designing private houses and public buildings twenty years ago. Nobody cared what they looked like. But they had been taught, to some extent, or that Club was leading them to think, that the question was an important one.

ARCHITECTURAL EDUCATION.

In a paper entitled "Modern French Architecture," read recently before the Cambridge University Architectural Society, Mr. Fernand Billerey touched on the subject of architectural education in France. A great deal had, he said, been heard lately in this country of such expressions as "*ateliers*," "*en loge*," "*esquisses*," and "*rendus*," but he was not so sure that, apart from those additions to the student's vocabulary, the British method of forming young architects had come much nearer to the French one. The British method had been undergoing considerable change during the past fifteen or twenty years, and one could hear everywhere expressions of satisfaction that the old system of "articles" or "pupilage" had been slowly but surely superseded and replaced by that of the schools of architecture. It was probably too early to judge by the results whether that change was for the good. If, however, one compared the new state of affairs with the French method, which was called the "*atelier*" system, it must not be forgotten that the French system was originally an improved, an organised, pupilage system. Indeed, the members of an *atelier* were the pupils of one practising architect, and the *atelier* used to be—up to about the middle of the nineteenth century—nothing but the drawing office of the master. The art of architecture was taught by an architect with a practice to young men articled to him. The Beaux-Arts School carefully refrained from interference with that tuition, but it offered means to different *ateliers* to compare notes by competitions—it completed their education (but not their tuition in art) and their general and scientific knowledge by courses in mathematics, physics, chemistry, the theory of building construction, history, literature, &c. That was the main characteristic of the French Beaux-Arts system. It did not and would not attempt to teach the art of architecture. That suggested the most important question—could art be taught in a school by professional teachers, or must it only be "practised" under the guidance of one who had already acquired knowledge and experience?

He was not proposing to answer that question, but was pointing out that the French reply to it in adopting a clearly-defined policy of artistic education was: "No! Art (whether of architecture or of painting or of sculpture) was not to be taught." He had been told that quite different was required for the British. Whether that were so he must leave to others to decide. When he said "teaching the art of architecture" he meant that part of the education of the architect which is art (the art of designing); all the other knowledge one would like the perfect architect to possess (and an architect should be not only an artist but also a professional man, a man of science, and an intellectual man all round); all the rest of his knowledge could and *should* be taught to him, and the more of that the better.

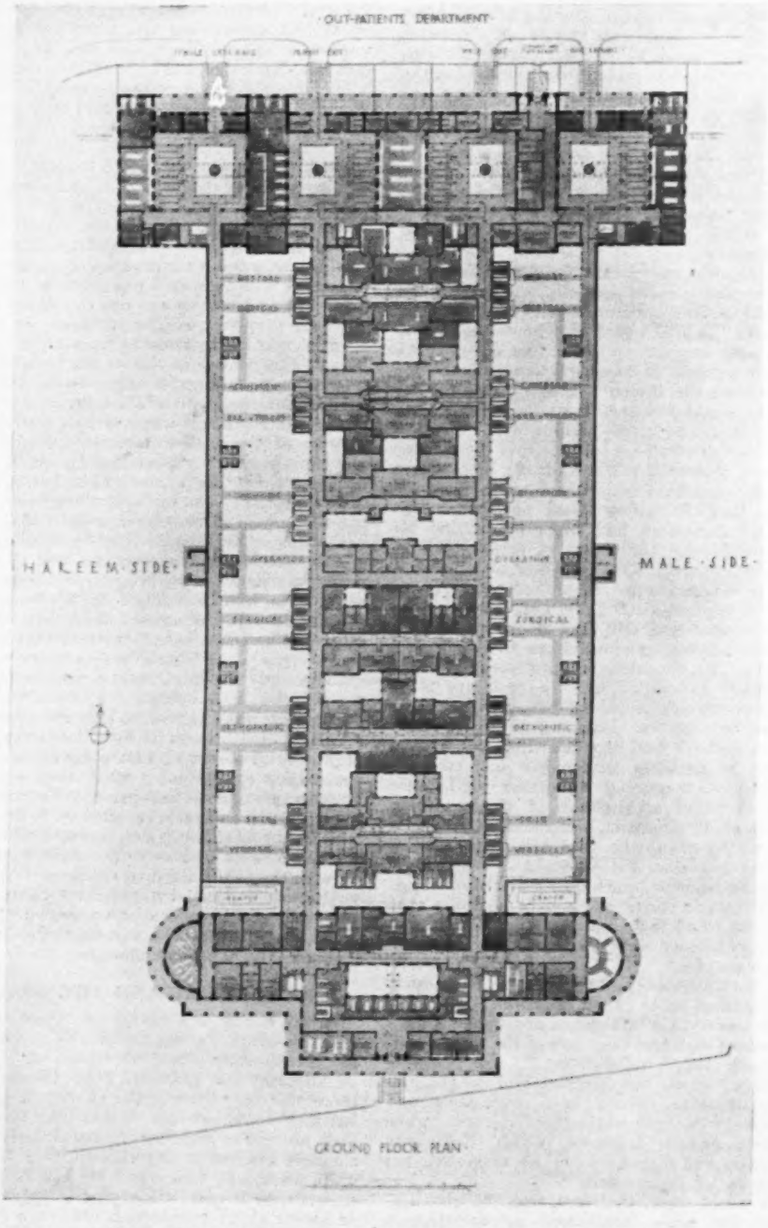
If he had indicated the principles which formed the basis of the Beaux-Arts system, in practice things were a little different. Originally the *ateliers* used to be nothing but the drawing office of the master, but of late years they had become something else. Masters had separated their drawing office and their *ateliers*. There were probably too many students, which was probably not doing any more good to the master's practice than to the students themselves. Teaching had been kept apart from practice, and therein lay a certain amount of danger—designing being kept too distinct from building, too much importance given to presentation, to a florid and brilliant type of detail, inspired neither by the requirements of the one who built, nor by the aims of the craftsmen, nor by the nature of the materials employed.

Those responsible for the welfare of the French school were well aware of the danger, and were it not for the war some remedy would have been attempted. One natural remedy, however, was found in this fact that the Beaux-Arts tuition spread over a great number of years and was elastic enough to leave the student all the necessary time to engage in practice, either as a draughtsman or even on work of his own. The slow but thorough method which enabled young architects to remain in contact with all the requirements and difficulties of practice, whilst simultaneously their minds were not allowed to lose sight of the higher problems of design, which they had an opportunity of discussing in the *ateliers* and practice under the guidance of their elders or of the master, had given the most brilliant results, not only in France but also in America, where a majority of the successful architects had spent many years in the French *ateliers*, and where a system of education was developing on similar lines and in many cases with the assistance of the French.

CAMBRIDGE UNIVERSITY ARCHITECTURAL SOCIETY.

In the course of a paper dealing with architecture from the point of view of the Design and Industries' Association, at a recent meeting of the Cambridge University Architectural Society, Mr. Leslie Mansfield, F.R.I.B.A., explained that the Association was founded by a group of men who were conscious of a feeling of dissatisfaction with not only architecture, but every form of creative work, and were desirous of reconstruction. The founders realised that unless a position was clearly defined, and some remodelling of ideals took place, not only the commerce but the art of this country would suffer very seriously. A realisation of the commercial aspect of production was necessary.

The manufacturer of to-day had a function to perform, and that a service to the community, and the Design and Industries' Association was out to help him to do it by educating the public and creating a demand for better things. Without exception there was no building erected now which had not got to perform a very definite and very important function in their lives. It was a sorry thing to think that there should be among their commercial men a section so unenlightened that they should wish to build a big department store, complete with its huge floor area, in the fashion of an Elizabethan half-timber house. He felt that the production of such a building was nothing short of a crime.



Qasr el Aini Hospital and School Competition, Cairo.
Design submitted by Messrs. W. A. Pite, Son, & Fairweather.

Why construct an elaborate framework of steel and hang on its face a network of oak framing, even if that oak had been taken from an old battleship? He supposed that was the result of the craze for antique mongering in which they were so bound up. Tradition was undoubtedly a very valuable thing, but when the worship of it was allowed to influence them in such a way that they become buffoons, then, he said, better have done with it, but from real tradition there was no reason why they should want to escape, so long as they kept it thoroughly in control, and took upon themselves a certain courage, using it as a stepping-stone forward into the unknown with a confidence in their own abilities.

In architecture, and in any form of production, the plan was the thing, and he used that word "plan" in its widest possible sense. If they could only learn to plan the things they made as true expressions of their needs, life would be so much simpler.

THE ATMOSPHERE OF THE PICTURESQUE.

In the course of a lecture on "The Atmosphere of the Picturesque" at the Hampstead Central Library recently, Mr. Maurice B. Adams, F.R.I.B.A., said the imperative influence of atmosphere concerning things had been forcibly demonstrated during the last few days in the Law Courts by the expert evidence given in regard to the difficulty of arriving at an exact opinion on antique furniture when it was seen midst the historic surroundings of an old and beautiful country seat. The witness, when pressed under cross-examination, admitted that it made all the difference between inspecting a spurious fake under such conditions instead of coming to a judgment upon the same piece in a furniture warehouse; also the same restriction hampered conclusions as to *bona-fide* specimens which possibly had been more or less repaired. Environment or atmosphere could never be ignored and influenced conduct in all human affairs, however mundane or vicious they may be. In religion and art a recognition of atmosphere was absolute, though perhaps no stereotyped formula could actually explain why and how. De Quincey asked, "What is picturesque in relation to the beautiful and the sublime?" Sir Joshua Reynolds furnished an answer when he described a series of crosses as being "placed prospectively in an uncommonly picturesque manner." The relation of a building to its surroundings was of great moment. A bleak and rocky open spot in a wild position exposed to all the winds of Heaven demanded a different edifice from one more suitable for a cosy coomb well sheltered by trees. Traditional construction wherever it was found invariably accommodated itself to indigenous materials, and was the outcome of local needs.

It might seem paradoxical, but in recognising the charm of the picturesque in old buildings they were bound to assert the absence on their part of presumption to rank as architecture at all. They made no such claim because their genesis arose from their vernacular directness of construction and sublime simplicity. All preconceived quaintness was foreign to their inception. Such work was so primitive and so natural that it could not be successfully repeated. Their builders had no stylish notions, and what their ancestors built was spontaneous and new—therefore reasonable and pleasant. Old-time houses claimed their love because they were for all time understandable, practical, and human, the outcome of coherent craftsmanship, though very likely, at their best, little more than a sort of naively inspired rule of thumb without obligations of style.

The available materials were those ready to hand handled by old methods, leaving texture to speak for itself, whether stone, flint, or cob-walling, or tiles, slates, or slabs of stone were employed for the roofs. The bent tree roof construction determined the proportions between walling and the roof-tree. The "crucks" or balks of wood set the wrong way up mostly minimised or entirely obviated solid side walls. Thus, too, the ridges and entire weight of the roofings were carried quite independently of vertical walling. Basket-work and wattle, daubed with mortar or mud, served for the panels of such framed structures, and filled in the interspaces.

Brick nogging, in Stuart days, came into use, and when the timbers decayed they were roughcasted. The earlier fragile wattle framings of "raddle and dab" enabled thieves to gain an easy entry; hence the term "house breaking" survived. Thatch so freely used was warm and also allowed the peat fire's smoke to escape through the roof or under the thatched broad eaves long before chimneys and fireplaces came into use. Chalk mixed with clay was much employed in Devonshire, and chalk built up in courses with brickwork occurred in parts of Wiltshire. When glass was procurable windows came into use, but the majority of ancient dwellings had none or, if they possessed windows, shutters only were used to keep out wind and rain. Such picturesque discomforts did not seem to have troubled their forefathers, who survived many disagreeable inconveniences. The old monks shaved in the open air under a pent roof or in a draughty cloister where atmosphere made up for many sanitary shortcomings.

The lecture was illustrated by special slides, several being of a pictorial kind, showing some old cottages and houses, but not a few were devoted to structural and practical details.

Mr. William Woodward, F.R.I.B.A., who presided, took occasion, when proposing a vote of thanks, to protest against iron girders having been introduced into the magnificent timber construction of the great roof over Westminster Hall. Such a combination was out of all character and quite needless.

DOMESTIC ARCHITECTURE.

A lecture in connection with the Exhibition now being held by the Architecture Club at Grosvenor House, was given by Sir Lawrence Weaver, K.B.E., on "Fashion and Style in Domestic Architecture," on Tuesday. Style, said the lecturer, was a quality that pervaded work in all the historical periods which were conveniently labelled, although plenty of work of fine periods was lacking in style. In this connection he quoted the following words of Walter Pater: "There is style here: one temper has shaped the whole and everything that has style, that has been done as no other man or age could have done it . . . has its true value and interest;" and as to quality in style, "a certain strangeness, something of the blessings of the aloe is indeed an element in all true works of art; that they shall excite or surprise us is indispensable. But that they shall give pleasure and exert a charm over us is indispensable too; and this strangeness must be sweet also—a lovely strangeness."

Speaking of fashion, he said its true antithesis was tradition, the slow unconscious building up of methods of building intimately related to intellectual progress, racial characteristics, social change, political conditions and indeed all human influences. The Renaissance was the great break in English styles, and commencing about 1520, tradition continued for about 230 years until fashion began with Horace Walpole. It was a change with no relation to social habits or to craftsmen's developments or to deep variation in the course of culture as at the revival of learning which changed religion and philosophy as well as art, but to a freak of sentimentality that enthroned fashion as the guiding light, the outcome of which was that houses were built like abbeys and coal-scuttles like sepulchral monuments. After the decay of Classical tradition and the devotional enthusiasm of the Gothic revival and the broad un-English scholarship of Sir Charles Barry, two new schools of domestic architecture were founded by the work of Norman Shaw and Philip Webb, who both built on traditional lines, the former being particularly interested in design and the latter in materials. From Webb came the pious study of and protection of ancient buildings, the Society for which was founded by William Morris.

The lecture was illustrated by lantern slides of architectural work commencing with Gimson, showing early and local traditions and craftsmanship, hints of foreign tradition, Classical tradition, and the use of modern materials, down to the work of Sir Edwin Lutyens, which developed on historical lines from picturesqueness to the Classical austerity of the Cenotaph.

"INDUSTRIAL PEACE."

FOLLOWING upon articles by Lord Milner in *The Observer*, Lord Robert Cecil in a subsequent issue, under the above title, dealt with the industrial system and its defects, and the remedies that he himself would suggest, in an interesting article, from which we gather that the remedy for any defects in his opinion is by way of co-partnership. He says, "give to the employees the status not of hired servants but of partners, and they will approach their labours from the standpoint of a peasant proprietor," and he says it is a commonplace that a peasant proprietor works better and more contentedly than a mere labourer.

Now, in the first place, this comparison between a peasant proprietor and a labourer is hardly applicable, in our opinion, to the matter under discussion. The peasant proprietor, a small capitalist, is to the labourer what the small shopkeeper is to the ordinary employee in large works or undertakings; but letting this pass (and we are entirely in sympathy with the principle of co-partnership), Lord Robert then says, "How can this be done? There is really no difficulty. A partner is one who shares in the capital, the profits, and the management of the business. There is no reason why every wage earner should not be in this position."

If Lord Robert Cecil had said, "There *should* be no reason," we could understand his statement, but Lord Robert is suggesting remedies to the existing condition of affairs, and one of those conditions is the antagonistic and determined attitude of the Trade Unions to any such schemes. We cannot enter into this question fully in the present note, but we need only refer to the two cases—Amalgamated Society of Carpenters, Cabinet Makers and Joiners *v.* Braithwaite, and General Union of Operative Carpenters and Joiners *v.* Ashley (1922, 2 A.C. 440)—to illustrate the attitude of some, at any rate, of the trade unions towards such schemes. In the first of these two cases, there was a rule of the union under which any member could be fined or expelled who worked under a co-partnership system when such system made provision for the operatives holding only a minority of the shares; and in the second case, there were similar powers given by the rules to the union as regards a member proved to be working against the interests of the Society by working on the premium bonus system.

It is true that the House of Lords, in these cases, held that the jurisdiction of the Courts was not ousted by Section 4 of the Trade Union Act, 1871, and an injunction could be granted restraining threatened expulsion, as the rules did not apply to prevent the members from accepting these particular systems; but this is beside the point we are now making, which is the attitude of some unions at least to co-partnership schemes. In the first case, it must be observed the intention of the Union would appear to have been that no co-partnership scheme should be entered into which did not give the operatives at least an equal, if not a preponderating influence; and in both cases the Union took the case to the highest tribunal.

We consider that the giving of employees some share in the profits from work they are engaged in would encourage industrial efficiency in every way, but it is useless to propound such schemes as an easy panacea until the trade unions can be made to see the great advantages of the system. The trade union motto must be "Union is strength," but meaning thereby strength of the unions, not of the individual members in a financial sense.

TOWN-PLANNING INSTITUTE.

Acquiring and Replanning Congested Areas.

Mr. H. V. Lanchester (President) took the chair on Friday last week at an ordinary general meeting of the Institute held at 92, Victoria-gate, S.W.

Mr. L. C. Evans (Town Clerk, Salford), in a paper on the subject of "Acquiring and Replanning Congested Areas," first gave some particulars of actual administration, prior to 1919, of the Housing Acts in Salford. They had to decide first what they meant by congested areas, and, judged by the modern standard of twelve houses to the acre, Salford was hopelessly congested. In the suburban parts of the town built during the past thirty years there were wide streets and plenty of air space; and in some parts there were areas dignified by the name of parks where there were less than twelve houses to the acre. There was not now in the town a really large congested area exceeding 6.26 acres. He took it that congested areas were areas falling within (*a*) any houses, courts, or alleys, areas unfit for habitation; or (*b*) the narrowness, closeness, and bad arrangement, or the bad condition of the streets and houses or groups of houses within such area, or the want of light, air, ventilation, or proper conveniences, or any other sanitary defects, or one or more of such causes, areas dangerous or injurious to the health of the inhabitants either of the buildings in the said area or of the neighbouring buildings. If they were agreed that congested areas meant unhealthy areas as thus defined could the medical officer first prescribe an area of (say) 100 acres and represent that within such area the conditions of *a* or *b* existed with respect to ten acres and that the evils connected with such ten acres could not be effectually remedied otherwise than by an improvement scheme for the 100 acres. If the words "such area" in the latter part of the clause meant the "certain area" in the first part then the local authority might resolve that the 100 acres were an unhealthy area; and if the confirming authority agreed the local authority could buy all the buildings on the 100 acres at site value. They had this problem in a smaller way to decide in Salford. They had an area including factory premises, and the question was could they buy the whole of the premises in the area at site value. The opinion of the Ministry of Health was sought and the reply was that the application of the provisions of Sec. 9 of the Housing, Town-Planning, etc., Act, 1919, to individual cases was a matter for the consideration of the Minister after a local enquiry had been held. Continuing, the Minister said: "In general, however, he agrees that while premises other than dwelling houses are not excluded from the operation of Section 9, business premises should not as a rule be included in a scheme except for the purpose of making the scheme efficient, unless there is positive proof that they are (*a*) themselves unhealthy or insanitary, or (*b*) a source of danger to neighbouring buildings which, but for their presence, would otherwise be both healthy and sanitary."

It was obvious that the estimated cost of any clearance and replanning a congested area depended to a large extent upon the fact whether land and buildings were purchased at site value or partly at site value and partly at full value of land and buildings. Until a scheme had actually been made and the confirming authority had definitely stated which land might be bought at site value and which at full value, it was impossible for a local authority to estimate the probable cost of purchase. But in any event the main cost would be due to the annual loss due to rehousing the dispossessed tenants. This depended upon the price of land elsewhere than on the cleared site, the type and cost of the new dwellings, the rent likely to be obtained, and other factors difficult of access, so that it was almost impracticable to give any reliable figures of the probable cost of clearing any area. Having regard to the still existing high cost of materials and wages it seemed prudent for any district to make haste slowly in embarking upon any extensive schemes of clearing and replanning congested areas except those which were a source of real danger to health.

When the Housing Act of 1919 was passed the Medical Officer of Health for Salford specified twenty-one separate areas as coming within the definition of unhealthy areas. The approximate acreage of those areas was 44.23; they contained 2,375 houses, in which 12,034 people resided. It could not fairly be said of any of the areas that they were dangerous or injurious to the health of the inhabitants of the neighbouring buildings so as to include such buildings in the scheme for dealing with the areas. No schemes had actually been made, for the house shortage was such that the dispossession of 12,034 persons without making provision for rehousing would have been to make confusion worse confounded.

Proceeding to deal with the steps necessary to be taken for dealing with congested areas, Mr. Evans said the point was whether supposing there were houses or buildings other than dwelling houses in good condition, sandwiched between houses unfit for human habitation, could these houses be included in an official representation and purchased at site value. Personally, he was disposed to think they could be included. Would it be fair, however, for the local authority to attempt to buy the land and buildings at site value of the land? He doubted whether the Ministry of Health would pass any scheme containing such a proposal. Assuming that all the land had been purchased, what of replanning? That seemed to be entirely a question of fact. Unhealthy areas were, generally speaking, surrounded by other houses and buildings. They were unhealthy to some extent because of this very fact. But in most large towns since 1890, a period of 32 years, there had been a clearance of the worst areas and he doubted whether there were really large areas in many towns falling within the definition of unhealthy areas. Some town planners, untrammelled by considerations of finance and the long-suffering ratepayers, would sweep away such streets of houses and build beautiful garden city dwellings for the dispossessed tenants. But unfortunately the dispossessed remained obdurately rooted to the spot nearest their workplaces. They saved tram fares. They remained with their own kind, and their wages unfortunately did not permit of their being transplanted to green fields four or five miles away on the outskirts of huge industrial towns like Manchester and Salford. But although these difficulties existed there had in fact been a considerable movement outwards of population from the centre and a considerable clearance both in Manchester and Salford. The area of Manchester when it was first incorporated was only 4,298 acres, which was then largely covered with dwelling-houses. To-day that same area was nearly filled with warehouses, offices, and large buildings erected upon sites once covered with cottages. And so to a lesser degree the same thing had been going on in Salford. This clearance of congested areas, as these old dwellings could be called in the colloquial meaning of the term, together with all the preventive and public health work done, had reduced the death rate of Manchester and Salford to slightly less than 14 per 1,000 for the year 1921, and the infantile death rate for the same year was 96.98 per 1,000 in Manchester, and 106 per 1,000 in Salford. The death rate in 1890 of Manchester was 34.06, and of Salford 24.34, so that there had been a great improvement, and if financial considerations did not stand in the way there might be a good deal more clearance and replanning. But turning back to the table giving the approximate acreage of the twenty-one congested or unhealthy areas in Salford, they found that nine of them were less than an acre in extent, that three acres, one under four acres, one under five acres, two under six acres, and only one 6¼ acres. And as a matter of fact all of them were surrounded by streets of houses and buildings. Replanning even a five or six acre plot was therefore predetermined. On the 6¼ acre plot there were now 315 houses, or 50 to the acre, with a population of 1,527. If only 12 to the acre were erected on the cleared site, the Corporation could build only 75 houses on the site, housing only 300 people at, say, four to a house, a fifth only of the population now occupying the houses and leaving the balance, 1,227, to be housed elsewhere. At four to a house this meant the building of 300 houses miles away on the outskirts of the town. If the price of an A3 house was taken at £400, that meant an expenditure of £120,000. The rents of these new houses would have to be as nearly commensurate with the cost of £400 as was practicable, and that meant that the dispossessed tenants were turned into lodgers, overcrowding dwellings near their present habitations. Replanning was, therefore, a highly expensive process both to the Corporation and to the dispossessed.

No less than 2,375 houses had been pulled down, and the approximate acreage on which those were now standing was 44 acres. Let them assume that as many as 15, or even 20, houses to the acre could on the average be placed on the 44 acres. That, at 20 per acre, was 880 houses, in lieu of 2,375 houses, leaving a balance of 1,495 houses to be erected elsewhere. The 2,375 houses at (say) £400 per house was £950,000. It was estimated by the Manchester Housing Committee that on an expenditure of £400 per house there would be an annual loss of £12 per house, and they proposed that £6 per house per annum should be paid by the taxpayers and the other half by the local ratepayers. If it be assumed that this amount of £12 was correct, the annual loss for a period which was estimated at 50 years would be £28,500 per annum. Therefore the taxpayers would pay £14,250 per annum, and the Salford ratepayers pay another £14,250, or nearly 3d. per £ on Salford rates, to subsidise the rents of the tenants. It would be seen that acquiring and replanning congested areas on the most moderate scale was very expensive—it was a matter of money.

Discussion.

Mr. R. C. Maxwell (member of Unhealthy Areas Committee), in proposing a vote of thanks to the author, expressed the opinion that where property which was sound and decent was included in a suggested clearance scheme for the purpose of adding to the efficiency of the scheme, the Courts would not agree to the owner being deprived of any part of his property. Any other view would not only lead to legal trouble but would stop progress in regard to the clearing of slum areas. He considered that a good deal could be done if local authorities co-operated with property owners' associations in regard to improvements, and urged that the authorities of big towns should take a broad view and form schemes for the whole of the towns.

Mr. G. L. Pepler seconded the motion and it was carried.

Measurement Tables.

Messrs. Gall & Inglis have issued the "'Express' Superficial, Cube, and Girthing Reckoner," price 2s. 6d., which combines in one volume detailed tables for every kind of measurement in square or cube feet or yards. The main superficial tables give measurements up to 10 ft. by 100 ft., with inches to 13 ft. by 13 ft.

THE WEEK IN PARLIAMENT.

WESTMINSTER, *Wednesday.*

Major Malone asked leave to bring in a Bill to enable leaseholders of houses whose original leases were granted for a term of not less than thirty years to purchase the freehold estate, and such other outstanding interests affecting the property, on such equitable terms as, failing agreement, might be determined by the Minister of Health. He said that landlords granted leases of houses and shops for a period of 99 years, and they never contributed one penny towards local taxation. The leaseholders had to pay rates and taxes and, in addition, they paid for making up the roads on the landlord's property. They had to pay also a ground rent, and at the termination of the lease they had to see that the property was in good repair.

The Bill was read a first time.

The Building Trades' Dispute.

Mr. T. Thomson asked the Minister of Labour whether he would draw the attention of the parties concerned to the national agreement entered into on April 9, 1921, between the National Federation of Building Trades Employers and the National Federation of Building Trade Operatives, which provided that, before any stoppage of work could take place, six calendar months' notice had to be given to terminate that agreement.

Sir Montague Barlow said he felt both the employers and workers would avail themselves of all possible means of reaching a settlement and avoiding a stoppage of work.

Revaluation of Property.

Mr. Baldwin (the Chancellor of the Exchequer) informed Mr. Cooper Rawson that the work of revaluation of property for Income Tax and Inhabited House Duty purposes was now being completed, and it was anticipated that the notices of the new assessments of annual value would, for the most part, be ready for issue by the end of April. Where a house was let to a *bona fide* tenant, and the rent had been fixed in accordance with the Rent Restrictions Act, 1920, that rent was normally being adopted as the basis of the annual value for Income Tax and Inhabited House Duty purposes.

Proposed National Housing Bank.

Colonel Newman asked the Chancellor of the Exchequer whether, with a view to restoring credit to the building industry, and allowing the citizen in need of a new house the opportunity of having a house built which should be his freehold property, he would establish a national housing bank empowered to make advances to builders or potential owners of houses approved by the local authority at the same rate of interest as was paid on the war loan, with an added percentage which would repay the advance in 25 years.

Mr. Baldwin said he could not undertake to embark on banking operations of the nature suggested. He had no reason to suppose that the existing facilities were insufficient.

Materials for State Houses.

Mr. N. Chamberlain informed Capt. Benn that estimates of the quantities of materials required for the erection of various types of houses erected under the housing schemes had been made. When set out in detail the list of materials required was somewhat lengthy, but a general summary of the quantities of the principal materials required in the erection of two types—a parlour house and a non-parlour house—was as follows:—

Type of House.	Floor Area	Description and Quantities of Materials.								
		Sand.	Lime.	Cement.	Bricks.	Slates.	Timber.			Lead.
							Carcassing.	Joinery.	Flooring.	
	sup. ft.	cub. yds.	cub. yds.	tons.			cub. ft.	cub. ft.	squares.	cwt.
Parlour ..	1,058	23	6·25	3·1	21,000	1,600	157	122	8·5	6·8
Non-parlour	809	17	4·75	2·45	15,850	1,239	120	114	5·75	5·25

Mr. W. Thorne asked the Minister of Health if he was aware that cement, tiles, bricks, timber and other material were up in price, ranging from 100 per cent. to 250 per cent. above pre-war price.

Mr. N. Chamberlain said the average percentage increase on pre-war prices in recorded market prices of the various materials required for the erection of a workman's house in the London district was at present from 65 to 70.

Wages Increases.

Replying to Captain W. Benn, Sir M. Barlow, Minister of Labour, said the following table showed the percentage increases, between the end of 1913 and the present date, in the recognised rates of wages in ten towns of varying importance in different parts of the country. As the weekly working hours had been reduced since 1913, the percentage increases in weekly rates of wages were less than those in hourly rates. Accordingly, both the hourly and the weekly percentages were shown in the Table:—

PERCENTAGE INCREASES IN RATES OF WAGES BETWEEN THE END OF 1913 AND MARCH, 1923.

Town.	Bricklayers	Masons.†	Carpenters & Joiners.	Plumbers.	Plasterers.	Painters.	Labourers.
			Hourly Rates.				
London ..	74	74	74	71	74	100	100
Newcastle ..	100	100	100	110	100	122	122
Manchester ..	90	100	90	110	90	111	131
Birmingham ..	100	100	100	105	95	122	114
Derby	111	111	122	128	150	150	150
Lincoln ..	135	122	135	135	122	150	173
Chatham ..	78	100	88	88	78	129	118
Reading ..	94	94	94	94	83	136	127
Southampton	74	94	74	74	94	94	92
Cardiff ..	111	111	111	116	111	135	131
			Weekly Rates.*				
London ..	58	58	58	57	58	82	82
Newcastle ..	79	99	79	79	79	99	99
Manchester ..	74	84	76	90	72	93	109
Birmingham ..	76	76	76	82	72	85	89
Derby	73	82	83	93	107	94	106
Lincoln ..	101	94	105	101	94	118	133
Chatham ..	45	63	53	53	45	86	78
Reading ..	58	58	58	58	49	92	85
Southampton	47	65	47	47	65	65	63
Cardiff ..	77	77	77	83	77	96	94

* Calculated on the basis of the recognised hours of labour in a full normal week, taking into account both summer and winter hours. † Banker Hands.

Unemployed in the Building Industry.

Sir M. Barlow (Minister of Labour) informed Capt. Benn that the number of men in the various building trade occupations in Great Britain and the numbers of men unemployed at February 26, 1923 (the latest date for which figures were available) were as follows:—

Occupation.	Estimated No. of men insured under the Unemployment Insurance Acts.	No. of men unemployed at February 26, 1923.
Carpenters	123,820 ..	13,876
Bricklayers ..	58,540 ..	7,222
Masons	21,490 ..	2,017
Monumental Masons	1,520 ..	150
Slaters	5,190 ..	757
Plasterers	16,290 ..	2,603
Painters	109,800 ..	27,545
Plumbers	33,090 ..	4,639
Labourers of above	257,180 ..	59,553
Others	88,630 ..	17,899
	715,550 ..	136,261

Naval War Memorials.

Lieutenant-Colonel Jackson, Financial Secretary to the War Office, informed Mr. Cassels that the Imperial War Graves Commission was in process of erecting three memorials to the memory of officers and men of the Royal Navy who were lost at sea. The total cost to the public of the three memorials was not expected to exceed £70,000. The procedure adopted by the Imperial War Graves Commission when placing contracts for the construction of these memorials was that of competition among selected firms.

Repayment of Loans.

Mr. D. G. Somerville asked the Minister whether he could give the estimated anticipated average age of the houses built under the subsidy scheme of the late Government.

Mr. N. Chamberlain said it was the practice to allow a period not exceeding sixty years for the repayment of loans by local authorities for the erection of houses under the Housing Acts by ordinary methods of construction, and it might be taken that this period represented a conservative estimate of the life of the houses.

Land Transfer Fees.

Mr. D. G. Somerville asked the Minister of Health whether he would, in connection with his housing scheme, consider the desirability of recommending to the Government the cheapening of transfer fees in respect of land.

Mr. N. Chamberlain replied that he would give the matter careful consideration.

The New Subsidy.

Mr. Neville Chamberlain informed Mr. T. Thomson that the result of the negotiations with the representatives of the local authorities was an agreement for a subsidy of £6 per house per annum for twenty years, and legislation enabling the grants to be made would be introduced as soon as possible after the Easter Recess. In the meantime, local authorities who proceeded to build with his authority would, in due course, participate in the proposed grants. There was, therefore, no reason for any delay in proceeding immediately with their schemes.

Mr. Clynes: Does the Minister of Health consider that any legislation will be necessary to prevent an artificial increase in prices as the result of this policy?

Mr. Chamberlain: I hope not, but the matter will be very carefully watched.

[We make some comments on the terms of the Government assistance in our notes, page 472.]

THE BUILDING TRADE.

BUILDERS' WAGES.

The result of the ballot of the operatives in the various branches of the building trades on the employers' proposals for a 10 per cent. reduction in wages was announced on Wednesday at a meeting of the National Wages and Conditions Council for the Building Industry.

The ballot has given a majority of more than three to one against acceptance, the figures being:

For acceptance	.. ..	42,606
Against	.. .. ..	140,952
Majority against	..	98,346

The following official report of the proceedings was issued on Wednesday: "The National Wages and Conditions Council met to-day and received the report of the result of the vote of the operatives upon the employers' proposals for a reduction of wages, from which it appeared that the proposal had been rejected by a large majority. The operatives' representatives suggested that in the circumstances it was desirable that the present position should be maintained for a further period. After considerable discussion the employers' representatives intimated that they would have to report to their constituent bodies that the council had failed to reach a settlement, and the council decided to adjourn meanwhile."

An official statement was issued by Mr. W. W. Nicholls, the President of the National Federation of Building Trade Employers as follows: "The report as issued by the joint secretaries of the National Wages and Conditions Council does not fairly convey the situation as it stands. The operatives' proposal to retain the status quo was unanimously rejected by the employers, and as the council's functions as a negotiating body had failed, the meeting was adjourned to an indefinite date. The position will be considered by the employers at a special meeting early next week, and their national decision will determine what action will be taken."

Interviewed by a *Telegraph* representative, Mr. Nicholls said: "There is no reason to suppose that the special meetings called for the early part of next week will do anything else than confirm the employers' view of the Wages and Conditions Council." Asked whether he thought it possible that a dispute might be avoided, Mr. Nicholls replied: "My answer is, 'No.' I do not see how there is going to be anything else but a dispute. It is imperative for the right conduct of the building industry that lower wages should become immediately operative."

Mr. George Hicks, President of the National Federation of Building Trade Operatives, said the vote of the operatives having been taken in accordance with the constitution of the Council, and the operatives having declined to accept the employers' proposals for a reduction of wages, the workmen's section of the National Council for the industry asked for the status quo to be maintained, and for any proposals on the part of the employers to vary the existing rates of wage to be made under the rules governing the constitution of the Council.

Mr. George Hicks later issued a reply to the statement made earlier by Mr. W. W. Nicholls. He said that Mr. Nicholls's statement might reveal what was behind the employers' mind, but it most certainly was an exaggeration to say that that was clearly demonstrated at the meeting. "I, for one, am astonished at Mr. Nicholls's statement," he said. "Let me add, so that there may be no doubt, that if this statement represents the attitude of the national employers and they decide to translate it into action, we (the operatives) shall be quite prepared to accept the challenge and to contest every inch of the ground."

From a long statement issued by the National Federation of Building Trades Employers just as we were going to press, we take the following:—

A special meeting of the Executive Council of the National Federation of Building Trades Employers (and the Employers members of the other Bodies represented on the National Wages and Conditions Council) has been called for next Wednesday, the 28th inst. Meanwhile meetings have been arranged in every Regional Federation throughout the country with a view of empowering the National representatives who attend the Council Meeting to decide upon the steps necessary to deal with the position.

No other result of this meeting is anticipated but that the proposals of the Administrative Committee will receive the definite approval of the Council, and that all necessary steps will be taken to bring about a successful issue.

Throughout the whole of the negotiations the Employer Bodies on the National Wages and Conditions Council have been in complete harmony and are working towards the same definite end. And this is the revival of the building industry and the supplying of the country's needs by the only possible means at their disposal for rendering building an economical possibility, which in this instance means the reduction of wages demanded.

"THE BUILDER" COST OF BUILDING COMPETITION—No. 2.

The first part of "*The Builder* Cost of Building Competition" having been completed, preparations are being made for Competition No. 2 for builders to tender for the erection of houses in accordance with the two winning designs.

In building, as in every other department of commerce and industry, time is the equivalent of money value, and the publication of detailed estimates for sound, straightforward buildings, such as have been placed first by Professor Adshead, the assessor, in the preliminary competition must help to do away with the delay caused by uncertainty as to the cost of building.

A knowledge of prices is regarded as an essential preliminary to the purchase of any commodity, among people possessed of a reasonable amount of caution; and when the commodity is of the magnitude of a house, whose cost may exhaust a large proportion of the purchaser's capital, hesitation is only reasonable as long as any doubt remains. That the building industry is suffering from this hesitation on the part of intending house owners cannot be doubted for a moment, and Competition No. 2 is being promoted with the object of ascertaining the reasonable cost of building at the present time.

A great deal of mystery surrounds the subject, and in the ordinary course the particulars of each contract are only fully known to the actual parties to it; indeed, in the normal routine of tendering for a domestic building from plan and specification, so many sporting chances are taken that the particulars of cost are not always thoroughly understood even by them. Guesswork must continue to play a part in these matters, for it is not always practicable to have accurate quantities taken off for the domestic work, but the *Builder* Competition No. 2 should result in the collection of definite information that will resolve doubts, and instead of endless hesitation and delay, result in the increased production that is really needed by the employer, the builder, and the craftsman.

NATIONAL FEDERATION OF HOUSE-BUILDERS.

THE annual meetings of the National Federation of House Builders were held at the Hotel Cecil, London, on Tuesday and Wednesday. At the annual business meeting, on Tuesday, Mr. H. R. Selley (London) was elected President for the ensuing year. It was announced that the Minister of Health (Mr. Neville Chamberlain) had consented to receive a deputation from the Federation on the subject of the Government's new housing policy.

The new PRESIDENT said it was essential that the housing question should be solved on economic lines. While they talked of the housing of the masses, let them not forget there was another large class who were not less entitled to consideration on this question. He referred to the middle-classes. They had arrived at a time when this section of the community should be encouraged and helped. If there was to be a £12 a year subsidy given to those who could not afford to pay, then the Government should not overlook the claims of that large and important class who shouldered their own responsibilities. They did not want charity from the Government, but maintained that they were entitled to consideration and justice.

MR. G. F. DARBYSHIRE (of Manchester) and MR. A. J. BELTON (of Sheffield), were unanimously elected Vice-Presidents; and Mr. G. H. BROWN (of Manchester) was re-appointed Treasurer. A vote of thanks was passed to the retiring President, MR. J. SQUIRES (of Nottingham).

The delegates were entertained to dinner by the London House Builders' Association, at the Hotel Cecil, on Tuesday evening, Mr. H. R. SELLEY being in the chair.

The toast of "The National Federation of House Builders" was submitted by MR. EDWIN EVANS, J.P., L.C.C., who said they had received during the last ten years about the worst treatment of any section of the community. One would have thought that any Government of the day would have said that it was an enterprise they must encourage. On the other hand, they had been called jerry builders; but if it had not been for the so-called "jerry" builder, the house shortage of to-day would be even a bigger tragedy than it was After all, who made the jerry builders? The jerry purchaser—the man who wanted to buy a thing as cheaply as he possibly could. He had known many good builders who had said they would build houses conscientiously and of the best materials, and yet neighbours had declared they would build the cheapest house they could and purchasers had chosen the cheaper houses. Builders and everyone else had to supply what the public required and at the price the public could pay. What was the alternative? The Government supply of houses—and what a mess they had made of it. The State and the country had found out that they could not build houses as cheaply as private enterprise. The "S.O.S." had been sent out and they had got to respond to it.

MR. R. A. COSTAIN, of Liverpool (past-President of the National Federation), responding said it was not they who suffered by Government restrictions, but the people who were starving for the want of the goods which they would provide if they were allowed a fair field and no favour.

THE CHAIRMAN, proposing "Our Guests," said he had had an interview that afternoon with Mr. Neville Chamberlain, who told him he was preaching to the converted. He (the speaker) was not in a position to give away anything that transpired, but he was convinced that the terms which would be set out in the Government's Housing Bill, properly

administered, would be of such a nature as would lend material assistance to private enterprise and give considerable alleviation to the people who were clamouring for houses. Builders were not out to form "rings" to bleed the public, but they were going to see that the industry was put on such a footing that it would be possible for a man to undertake work with safety and without the risk of landing in Carey-street.

The Right Hon. Lord Askwith, K.C.B., K.C., in reply, said the building industry was almost bled white during the war, and since the Armistice it had been "well messed about." Eventually the suggestion was made that the industry itself should deal with the building problem, but the trade had been brought to the condition where many were out of business, and those who remained were not in a position to command ready capital to the amount of thousands of pounds. Now, however, they had to deal with a new situation, and the new Minister, a business man, had taken into consultation the industry itself. Mr. A. W. Shelton also replied.

THE ANNUAL CONFERENCE.

The annual Conference was held at the Hotel Cecil on Wednesday morning. The President (Mr. H. R. Selley), describing an interview he had had with Mr. Neville Chamberlain, said that he and other representatives of the Federation went with definite instructions to put certain points before the Minister. They had asked how the new subsidy could be of any help to the private builder, and the impression they had received from the reply was that the money would be left in the hands of the local authority to deal with as it would. Another point they had put was as to the Small Dwellings Acquisition Act. Borrowers did not like the fact that it was open for any ratepayer to go into the District Council's office, turn up the ledger, and see exactly how their loan stood. A vital point was the fact that a man must be in possession of the house before he could apply for the loan. It was impossible to work the Small Dwellings Act without very material amendments to make it operative. Another point was that in town-planned areas, where houses were being built eight or twelve to the acre, the road charges were out of all proportion to the value of small houses. In Wandsworth, at the present time, an estate was being brought in being where every purchaser of a 29 ft. frontage was faced with a bill for £43 for paving charges. The most vital point was as to what could be done for the man who was prepared to solve his own housing problem—the occupying householder. It should be possible for a man with 10 per cent. of the price of his house, or even less cash in his pocket, to purchase the house, instead of the builder being called upon to make up what were known as second charges; the difference between what the purchaser had and the building society mortgage should be guaranteed by the Imperial Government or the local authority. The effect would be that whereas at the present time the builder had to lock up part of his capital in second charges, this money would be available for new building.

Among other points made by the President was one that relief should be given to all classes requiring houses. He thought that combines could be more effectively dealt with by builders than by a Government department. It was the easiest thing in the world to throw dust in the eyes of a Government department, but it would not be easy to throw dust in the eyes of a committee which he could nominate from the Federation. The Government should give power to organisations such as this to deal directly with those who supplied building materials. Builders had not yet had a fair start to erect an economic house. He himself now paid very nearly 60s. a thousand for house bricks for a workman's cottage, whereas in the old days he had been able to buy bricks suitable for inside work at 25s. a thousand. He moved the following resolution:—"That the Federation welcomes the declaration of a housing policy by the Government, and pledges itself to loyally co-operate with the State and local authorities in any scheme calculated to restore houses as a favourable investment. In the opinion of the Federation the extension of the State subsidy to private enterprise should be obligatory on the local authorities and the method should be specified by the Government. The Federation looks with interest for a declaration by the Government as to the assistance proposed to be extended to the middle classes."

Mr. A. Waddington (Sheffield) seconded the resolution, and a discussion followed.

The President, replying, said that it would be a question of private enterprise competing against local authorities. If builders could do better than municipalities with the subsidy the builders would get the palm.

The resolution was carried.

Mr. H. M. Grant (Birmingham) moved: "That the following scheme for the granting of assistance to private enterprise is, in the opinion of the Federation, the most economical and productive method of encouraging building of the smaller types of houses:—

(*a*) That a subsidy amounting in all to £150 per house, either in cash, or land and road-making, be given to the builder or owner of all new houses for the working classes.

(*b*) All plans to be approved by the local authorities, and the lay out to be on town-planning lines not exceeding twenty houses to the acre.

(*c*) The subsidy to be paid by the Government on production of a certificate by the local authority as to the completion of the house, as was done in the case of the previous grant to private persons.

He said that a clean cut subsidy in a lump sum was the best way to encourage the building of working-class houses, and the subsidy should not be restricted to so low a class of house as was the case at present. People strongly objected to a house where directly you stepped into the place you were in the room where the family were eating their meals.

Speaking on the point of the appearance of the houses being erected by public and private enterprise, he said you might go up and down the country and see the beautiful country spoiled by ugly rows of houses put up by the Government. People talked of the speculative builders' houses, but even the worst of these were not worse than the ugly houses now being put up by the Government.

Mr. G. Sadler seconded the resolution, and it was carried.

Mr. G. F. Darbys ire moved: "That in the opinion of the Federation the following schemes for the assistance of those who are prepared to buy their own houses would enable thousands of persons of small means to purchase houses who cannot do so now on account of the difficulty of securing an adequate amount on mortgage, and the heavy outgoings:—

(*a*) The Government to enter into agreements with established building societies, or other similar bodies, under which the society will advance to a purchaser for his own occupation 90 per cent. of the reasonable selling price of a house, on twenty years' repayment terms on a basis of 5 per cent. interest per annum, and the Government will guarantee to refund any loss by failure of the borrower to maintain his repayments, the guarantee to expire when the amount outstanding is reduced to two-thirds of the original loan.

(*b*) In the opinion of the Federation some consideration and assistance is due to those citizens who require more accommodation than that provided by the working-class dwelling, and that assistance can best be rendered by relief from local rates to an amount equal to the subsidy on working-class houses. This will enable thousands of thrifty persons to acquire houses who are debarred by the heavy outgoings incidental to repayments and interest on mortgages.

He said this scheme was being backed by various influential journals. If brought into existence it would enable the house builder to offer an attractive investment to the class of people who previously to 1909 had provided £24,000,000 per annum for house building.

Mr. R. A. Costain (Liverpool) seconded the resolution.

Mr. H. M. Grant said that all the Government was asked to do was to guarantee another 20 per cent. The builder would sell his house; the purchaser would want the bulk of the money found to pay for it. He would probably get 75 per cent. from a building society, and on top of that the Government would guarantee another 20 per cent. This would mean, in many thousands of cases, that the purchaser, by only paying £30 down, would be able to enter into possession of a house. He, like their President, had sold hundreds, he might say thousands of houses on that system; and in many cases there had been only a deposit of £5 paid. He could say he had never lost sixpence over it. As soon as a man paid his deposit it was astounding to see how both he and his wife would do all they possibly could to pay the balance off, and he (the speaker) had never known a purchaser of this kind to run the full time allowed for paying off.

Mr. E. R. Jones (Liverpool) spoke on the second part of the resolution, saying that the time had come for some break with the existing system of rating.

This led to a discussion, and an addendum to the resolution was proposed. The addendum, however, was not pressed, and the resolution was carried in the form above stated.

Mr. W. Boardley moved a resolution as to rent restriction. He said the Rent Restriction Act prevented the builder from selling his property and so liberating his capital. The building industry was in a most unfair position—they had seen other trades where millions had been made, while all the time the builder's capital had been commandeered. Builders did not want to oppress the people. Public opinion had been shown in recent elections, but the position had never been put before the public properly, that the builder's capital was tied up and he was thereby prevented from trading.

Mr. A. J. Belton (Vice-President, Sheffield), said that a definite policy was wanted. At present builders did not know where they were.

After some discussion, the resolution was carried in the following form: "That the continued uncertainty as to the future of rent restriction, &c., is preventing much house building enterprise, and the Federation is of opinion that it is only when a definite date is announced by the Government for the withdrawal of all restrictions, that the detrimental effect of the Act on the production of houses will begin to abate."

In the course of some closing remarks, the President said that when the Government's Housing Bill came forward it would receive the Federation's deep consideration. The Federation would do its part in seeing that the measure was put on a workable basis.

Wolverhampton War Memorial.

The contract for the Wolverhampton War Memorial was in the hands of Messrs. William Sapcote & Sons, 87, Camden-street, Birmingham. The stone is red Hollington, from the quarries of Mr. Stevenson, with Lazomby base, step and pavings from Mr. Graves' quarries. The surveyor was Mr. Henry Vale, Wolverhampton.

The Advertiser's "A B C."

We have received "The Advertiser's "A B C" for 1923, which has undergone the usual careful revision and has been brought, as far as possible, up to date. The volume is divided into three sections, including useful information in regard to British, Colonial and American and foreign business, and contains, amongst a large amount of other matter, examples of recent successful advertisements.

CONSTRUCTIONAL ENGINEERING UP-TO-DATE: FOR ARCHITECT & CONSTRUCTOR—II

BY GEO. KENWORTHY, Assoc.M.Inst.C.E.

STRUCTURAL BUILDING MATERIALS.

Foundation Concrete.

MAIN stanchion foundations fulfil three main functions.

(*a*) They distribute the load from the stanchion over an area made large enough to ensure that the requisite safe loading per sq. ft. of ground is not exceeded. (This will vary according to the nature of the ground, say, from 2 to 4 tons—area of steel base plate should be fixed by taking a limiting load of 12 tons per sq. ft. on concrete.)

(*b*) Further, the concrete block itself acts as a block in compression, transmitting the load down to the hard.

(*c*) The block acts as a key, binding the steel stanchions to the ground so that the necessary dead weight resistance is offered to the overturning effort from side wind. The earth resistance through frictional grip round the sides of block may also, of course, be taken into account when calculating the necessary weight of block.

If the ground is of a poor nature, *i.e.*, "made ground," the block may be required to project considerably beyond the steel base. If this is the case the concrete block should be reinforced, and treated as a girder. Or, it may be advisable to introduce a steel grillage. It must be strong enough to resist, without deflection, the concentrated load from the stanchion acting at its centre; with an evenly distributed load (based on the safe resistance of the ground) acting upward on the underside. In such a case as this good concrete and steel reinforcement are essential, but generally speaking only such conditions as those obtaining in cases (*b*) and (*c*) need be taken into account. That is to say, it is generally only a question of resistance to direct compression and providing bulk enough to give sufficient weight to counter the turning effort of the wind. Thus, low-grade concrete of a consistency 1:3:6 is quite suitable for all ordinary purposes. If reinforcement is necessary the consistency should not be less than 1:2:4. If concrete is to be put in water-logged foundations the dry materials must be well mixed beforehand. The important point to watch is that the mixture is kept together when reaching the water. This can be done by chuting it down a cast-iron pipe or tube, whose outlet end rests on the bottom.

Referring to the vexed question as to the use of sea water for concrete foundations, there is little objection to this whatever in foundations for piers, etc., and if the concrete is made in some such way as described, and provided it is taken down to the gravel, it will be found to give better results than the screw-piling methods. Salt water, however, is not considered advisable for reinforced concrete.

Reinforced Concrete.

Reinforced concrete is not within the scope of this article, but a few general notes may with advantage be given here for general guidance and comparison. It can be stated generally that in factory single-story buildings reinforced concrete does not compete with structural steelwork; the latter, though not of such durable character, is generally considerably cheaper.

For warehouses, for framed building work as common in London, and for heavily-loaded floors, however, reinforced concrete will often be found to give not only a more satisfactory but a cheaper job. In bunker work the reinforced concrete bunker is better than the steel-plated bunker, and generally can be made cheaper. Reinforced concrete does not require the same maintenance, and it is fire-resisting—a most important point when it is remembered that spontaneous combustion is not unlikely in bunkers, especially with certain types of coal. But if the bunkers are at any great height it will be found more economical to carry them on steel stanchions.

Anchorage Bolts.

It has already been mentioned that anchorage bolts may, in certain cases, be dispensed with advantageously (diagram 4, Part I, shows a typical foundation so arranged). For all joist stanchions up to about 10 in. by 5 in. in section, even only taking into account steelwork and bolts, this arrangement is a saving in cost. But further, and more important, is the saving in the building contractor's price per cu. yd. of concrete. If bolts are inserted in the concrete the centres of these must be accurately set out, the bolts set to template, and the concrete put in in different stages, necessitating about double the price for the concrete foundations.

Anchor bolts are, however, insisted upon by such authorities as the L.C.C., and of course they reduce the number of guys required and assist the steel erector. But, as mentioned earlier, it is almost impossible to design these so as to be strong enough by themselves to do the work for which they are intended, though they serve the purpose of assisting in convenience and safety during erection.

Diagram 10 (A & B) shows a foundation

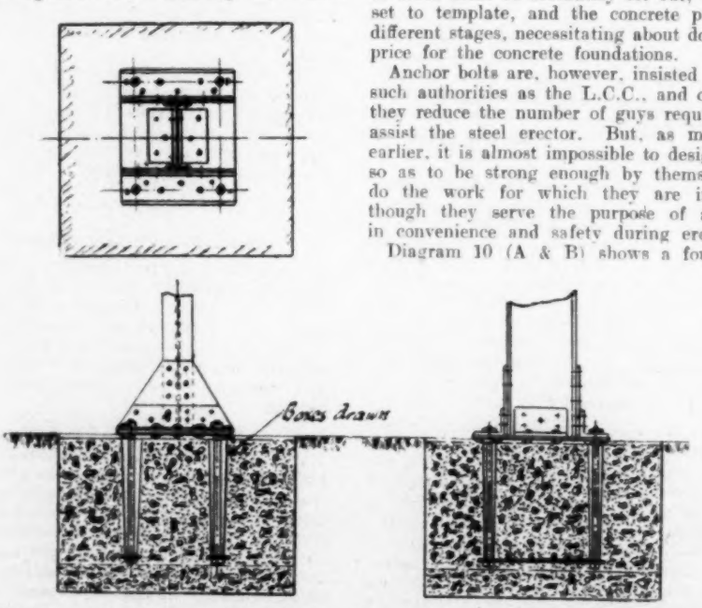
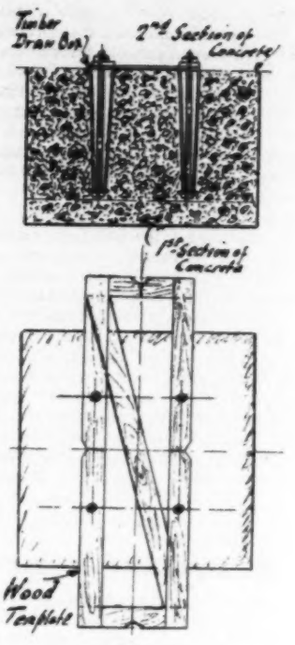


DIAGRAM 10B.—STANCHION ERECTED, PLUMBED, ETC., READY FOR GROUTING.



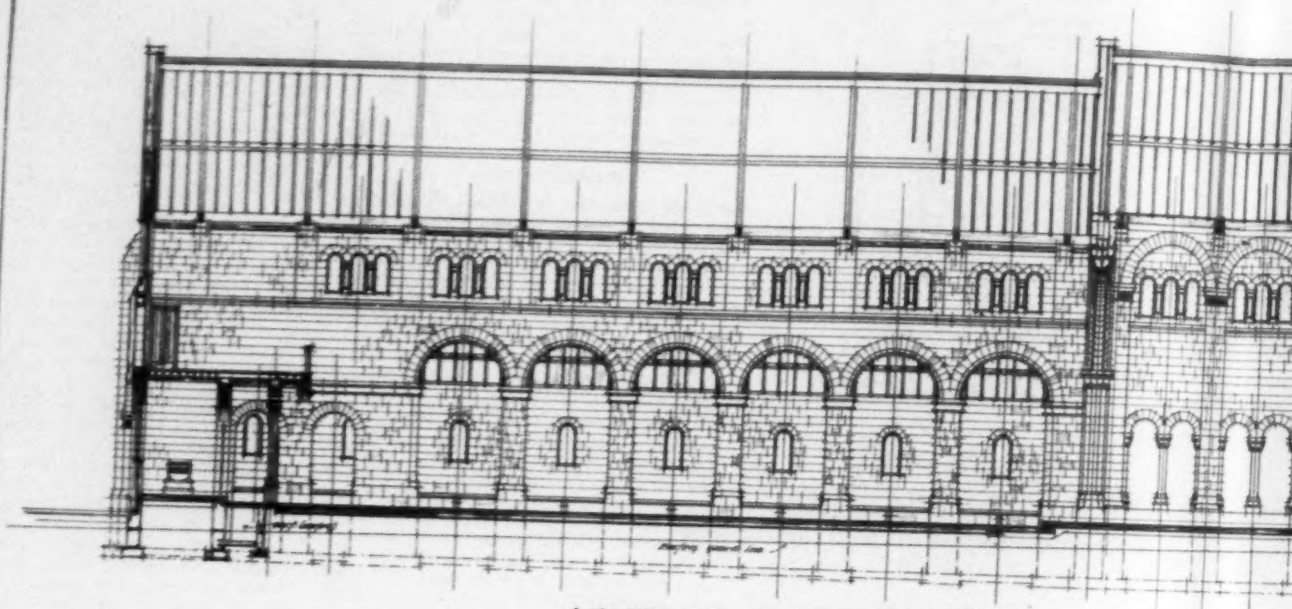
WOOD TEMPLATE HOLDING ANCHOR BOLTS AND DRAW-BOXES IN POSITION WHILE SECOND SECTION OF CONCRETE IS FILLED IN.

arranged for anchor bolts. It is almost impossible to fix these bolts in the concrete with such accuracy that the lining and centering of the stanchions will be correct, unless some adjustment is provided for. It will be seen from the sketch how a clearance should be provided round the bolts so that the stanchions may be erected, attached to anchorage bolts, lined up and levelled, and the bolts grouted in firmly afterwards. The centres of stanchions are roughly pegged out, the holes excavated, a pad of concrete put below the level of the heads of the anchor bolts, the anchor plates and bolts put loosely in position, taper timber boxes dropped on to the bolts, timber-frame template (which should be supplied by steel supplier) marked and notched with centres in both directions, set in correct position at the top of foundation, and then the concrete put in. The boxes should be drawn before the concrete has adhered and after the stanchions have been erected, trusses and steel framing fixed, stanchions lined, plumbed, and levelled, and grouting concrete run into the holes left by the boxes. The process described in some detail will demonstrate why there is this difference in cost of concrete in the two methods.

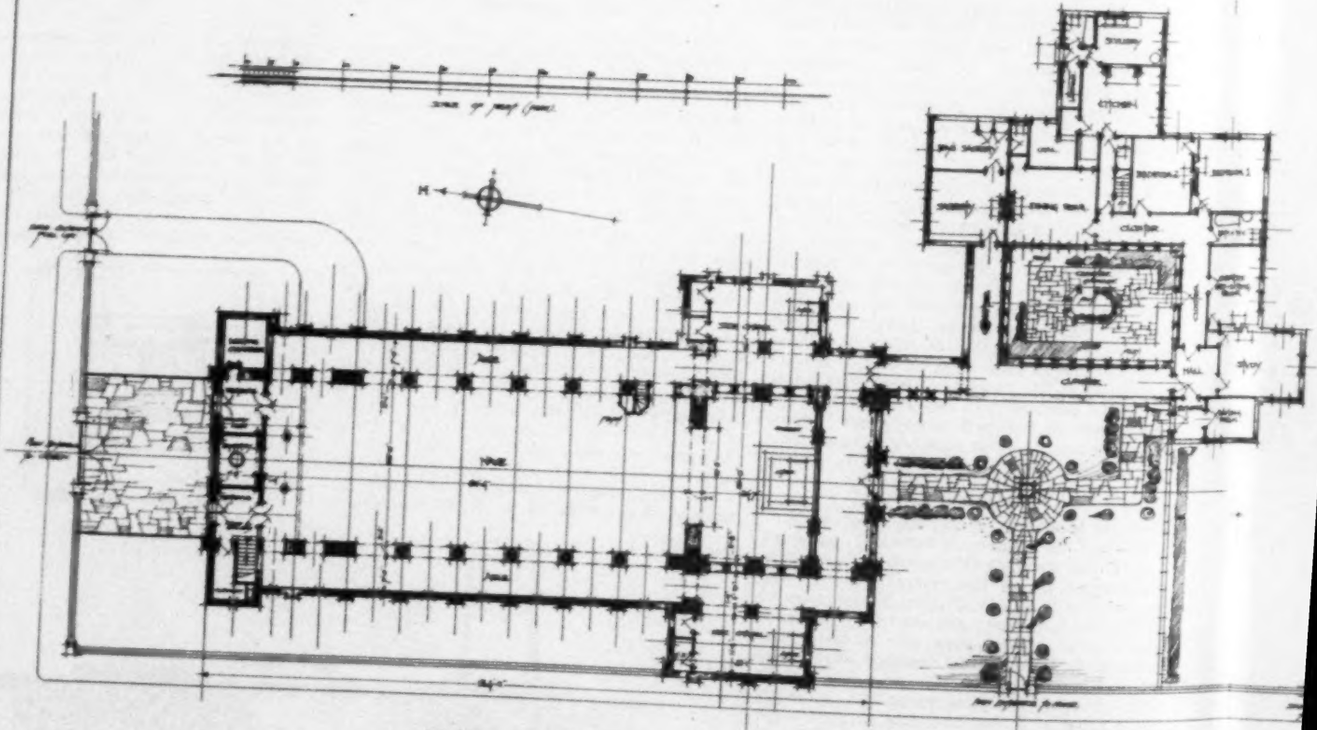
Grouting.

It was quite common practice until not many years ago to mount stanchions on York stone pads set in brickwork for foundations. This is now generally recognised as an unnecessary expense, whilst concrete blocks give many advantages apart from the question of cost. With stone pads it was necessary to have a perfectly flush bearing, and thus all rivet heads on the underside of the base plates were required to be countersunk and chipped. But when concrete pads are used it is usual to set the surface of these to an approximate level only, say, to about ½ in. below the requisite level of base plate. When the stanchions are erected they are adjusted to correct level by means of steel wedges. If snap-headed rivets have been put in bases it will be noticed that it is easier to apply these wedges.

No additional grouting is involved, for grouting is necessary in any case. Good



LONGITVDINAL SECTION THRO. CHVRCH



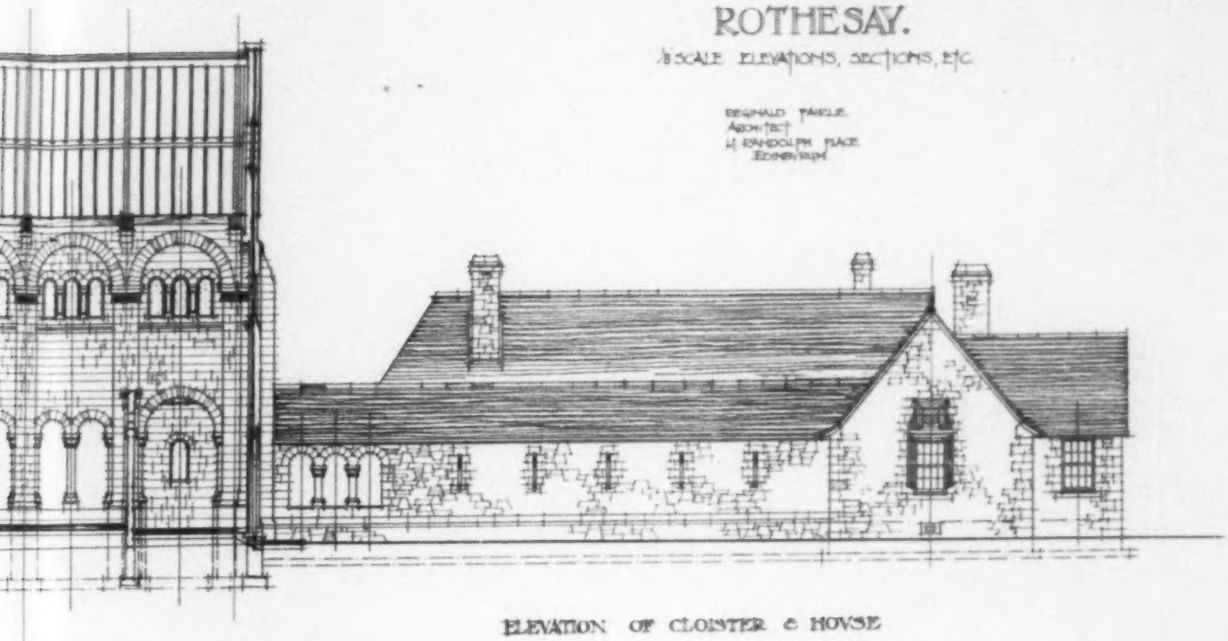
PLAN OF CHVRCH

GROVND FLOOR PLAN OF HOVSE

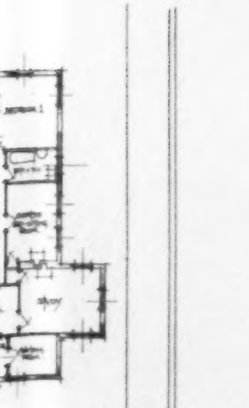
ST ANDREWS CHVRCH
& HOVSE
ROTHESAY.

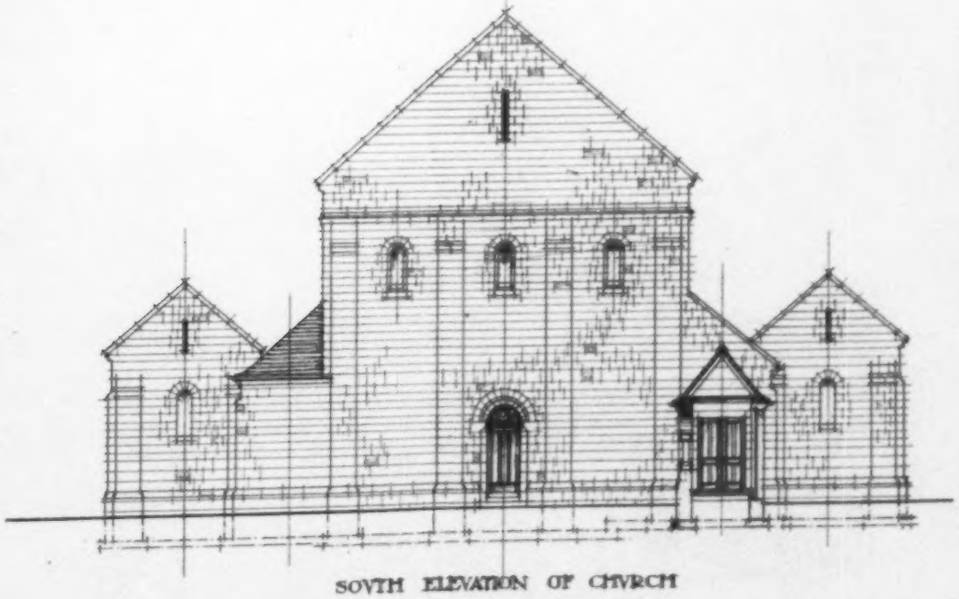
1/8 SCALE ELEVATIONS, SECTIONS, ETC.

REGINALD FAIRLIE.
ARCHITECT
4 RANDOLPH PLACE
EDINBURGH

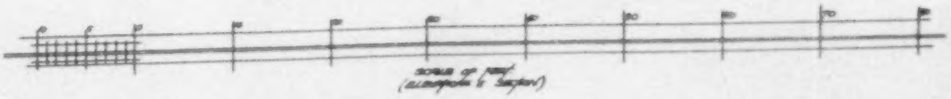


ELEVATION OF CLOISTER & HOVSE

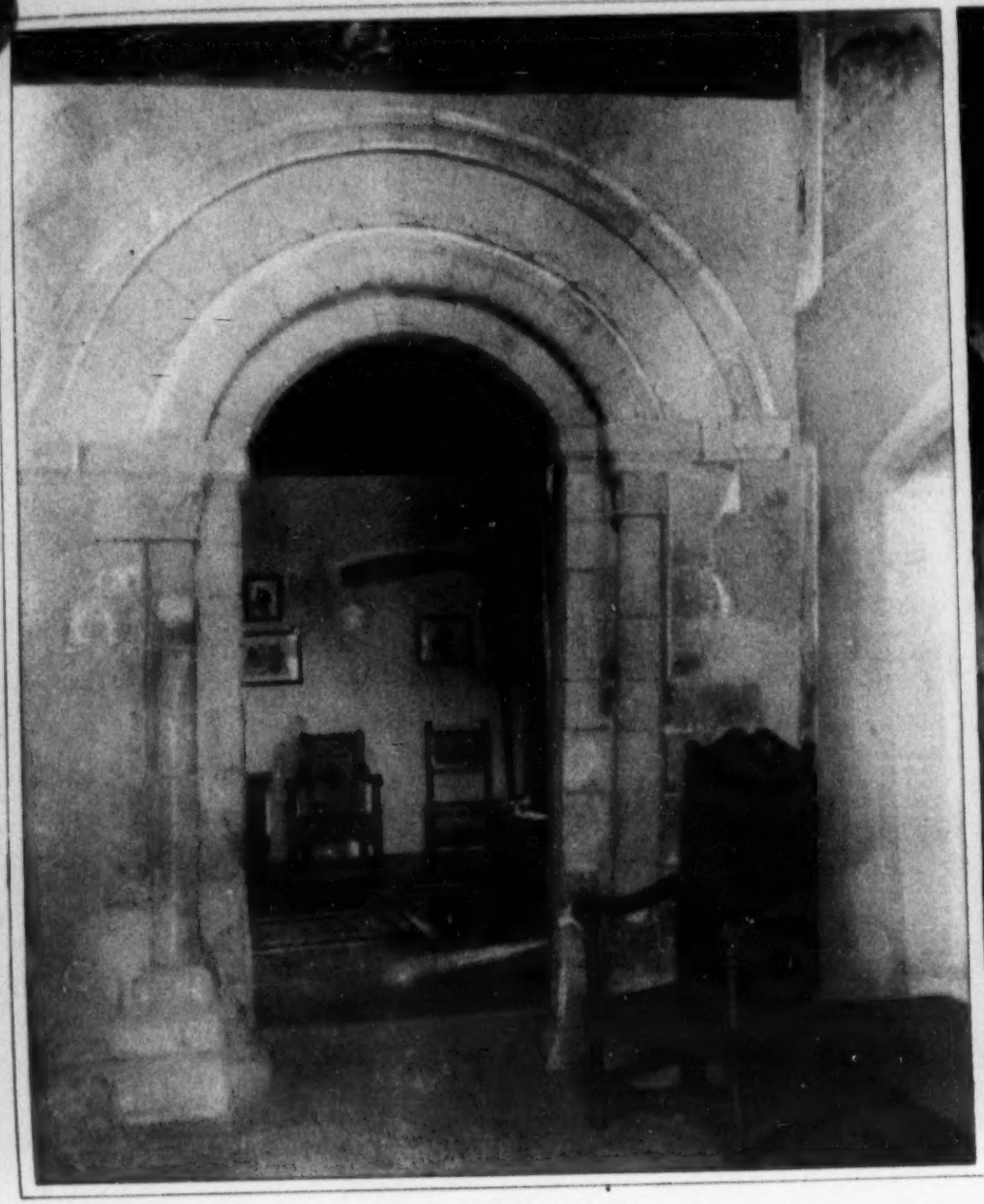




SOVTH ELEVATION OF CHVRCH



OF HOVSE



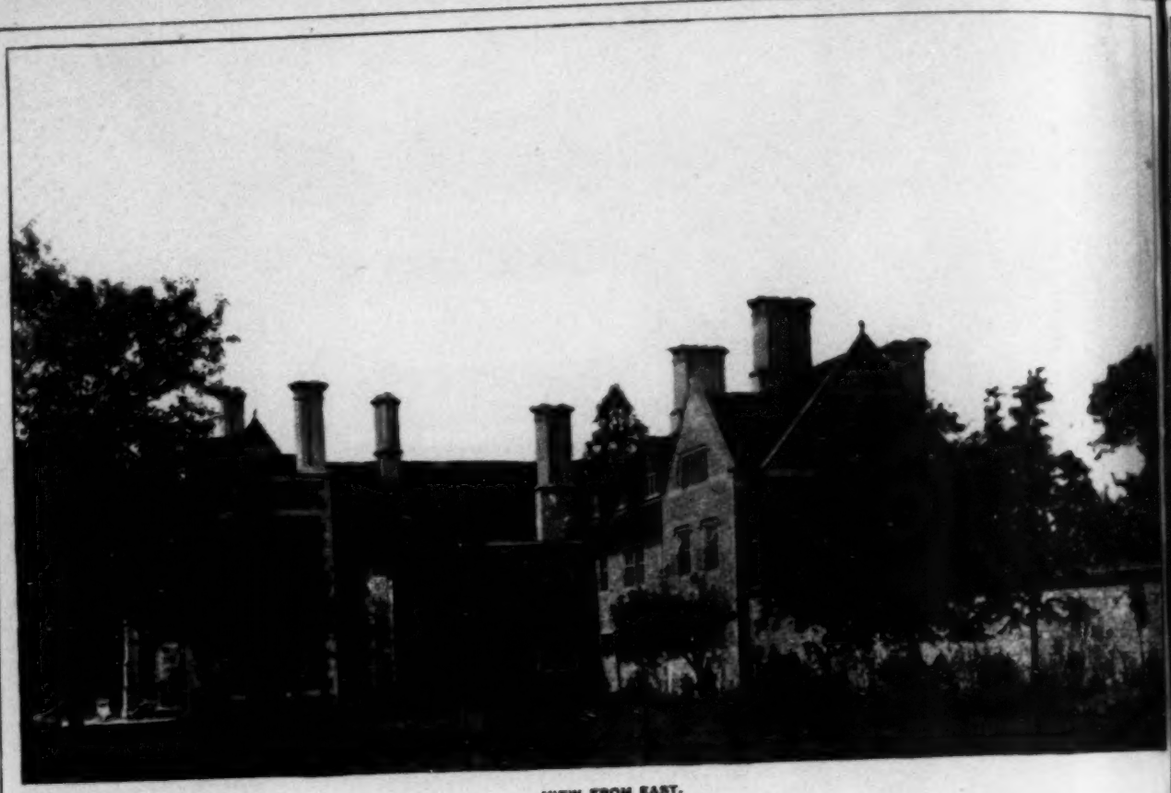
LOOKING TOWARDS INNER HALL.

CORRIDOR, GROUND FLOOR.

HORTON PRIORY, KENT: ALTERATIONS & ADDITIONS, Mr. GEORGE HORNBLOWER, F.R.I.B.A., ARCHITECT.

LOOKING TOWARDS INNER HALL.

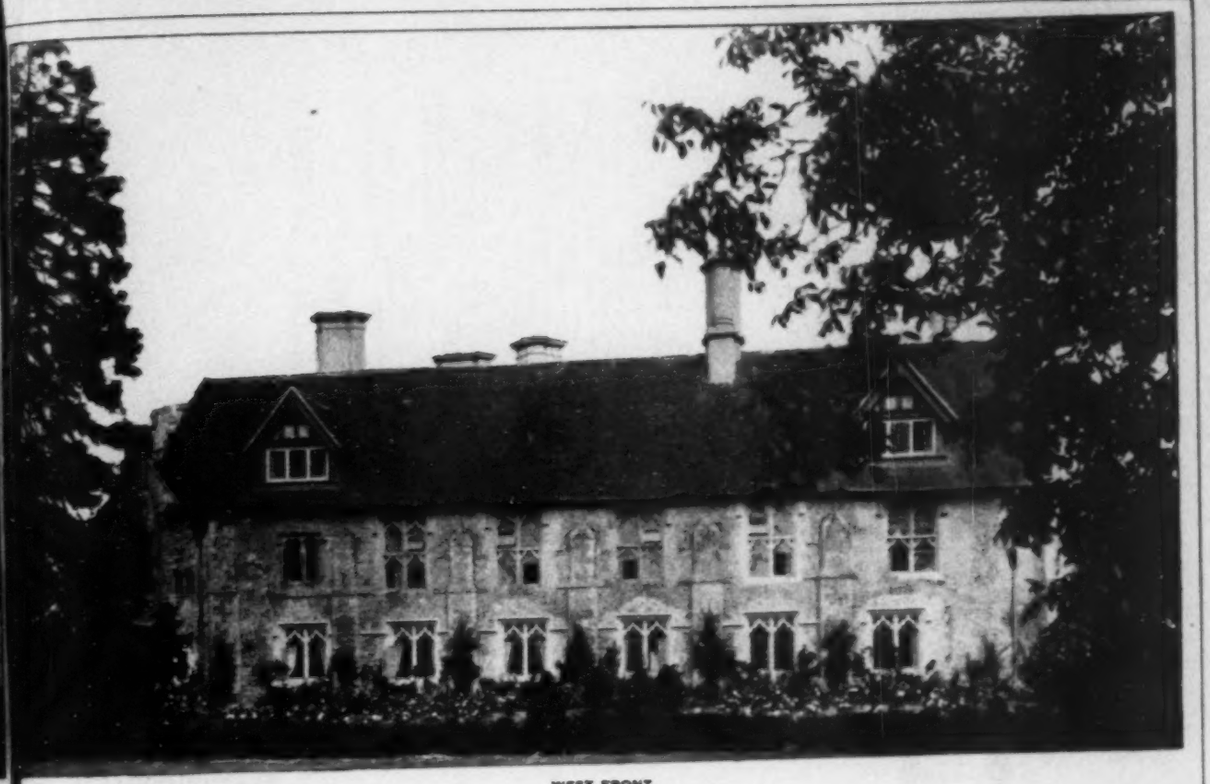
HORTON PRIORY, KENT: ALTERATIONS & ADDITIONS, Mr. GEORGE HORNBLOWER, F.R.I.B.A., ARCHITECT.



VIEW FROM EAST.

NEW SOUTH FRONT.

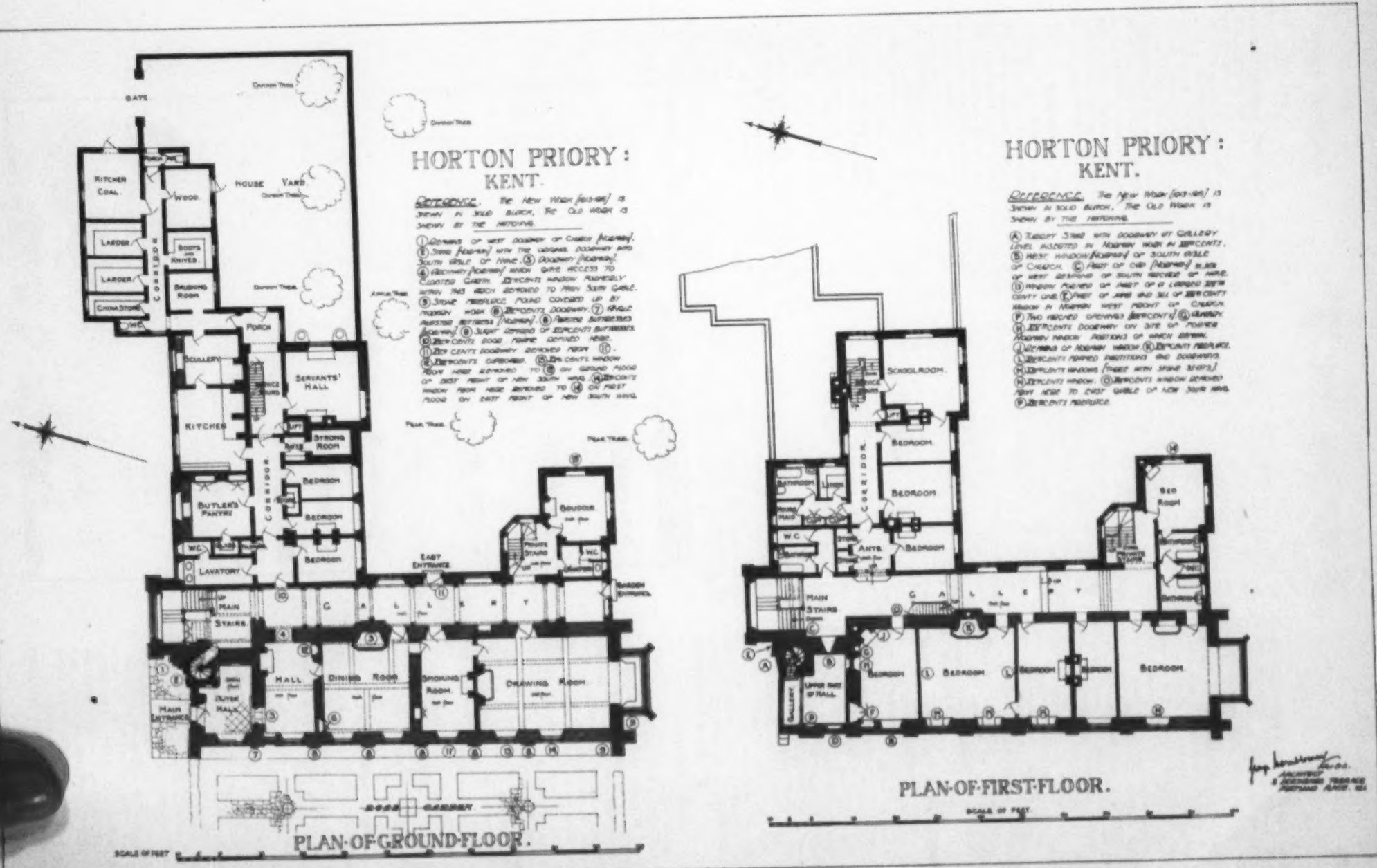
HORTON PRIORY, KENT: ALTERATIONS &

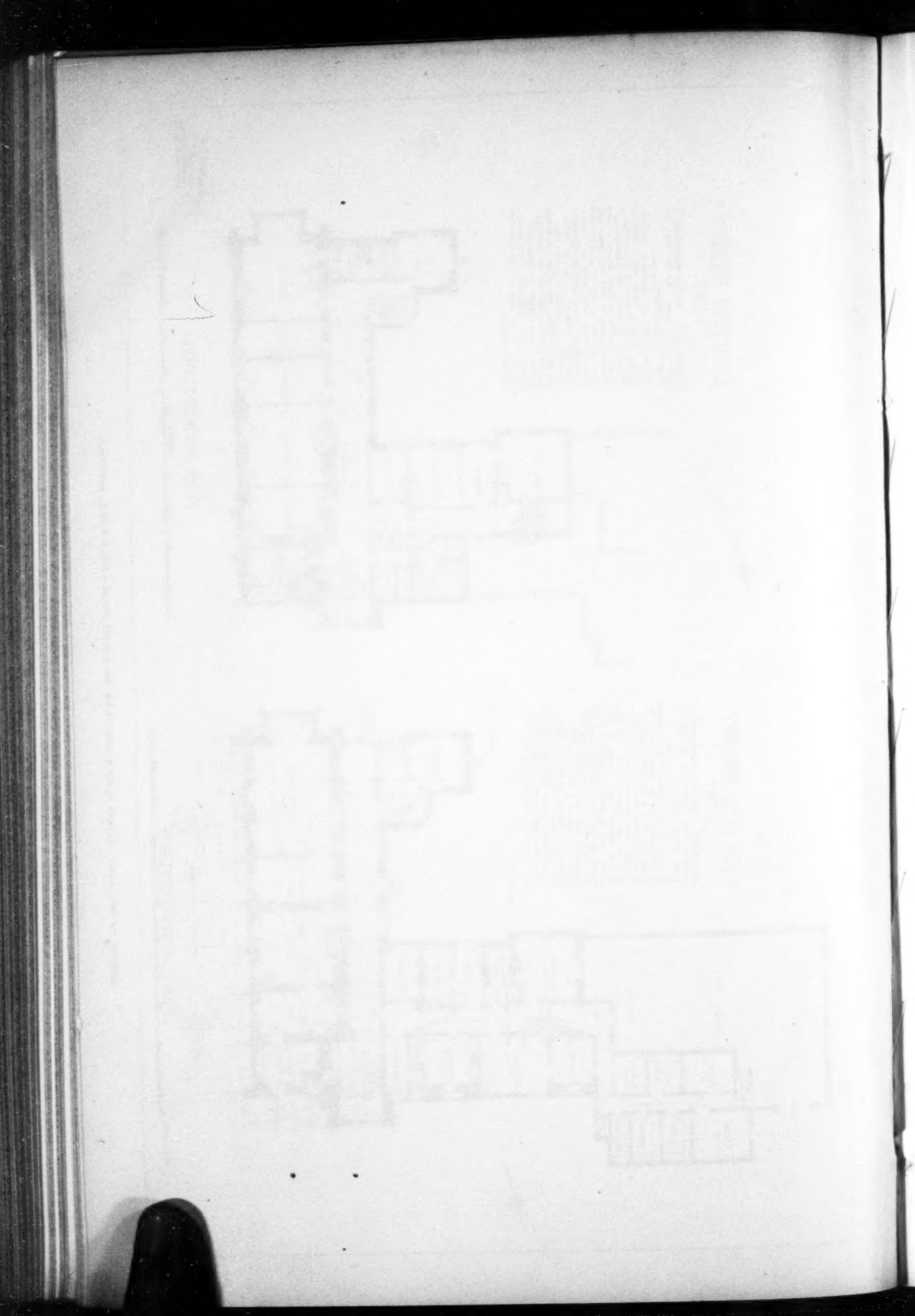


WEST FRONT.

VIEW FROM NORTH EAST.

IONS & A[illegible], Mr. George Hornblower, F.R.I.B.A., Architect.


HORTON PRIORY:
KENT.
Reference. The New Work [1903-05] is shewn in solid black. The Old Work is shewn by the hatching.
(1) Remains of West doorway of Church [Norman]. (2) Stairs [Norman] with the original doorway and South gable of nave. (3) Doorway [Norman]. (4) Archway [Norman] which gave access to Cloister Garth. 15 cents window formerly in this arch removed to N. South gable. (5) Stone fireplace found covered up by modern work. (6) 15 cents doorway. (7) Angle Norman buttress [Norman]. (8) Norman buttresses. (9) Slight remains of 15 cents buttresses. (10) 15 cents door frame obtained here. (11) 15 cents doorway removed from (12). (13) 15 cents cupboard. (14) 15 cents window from here removed to (15) on ground floor of east front of new south wing. (16) 15 cents window from here removed to (16) on first floor on east front of new south wing.
GATE
KITCHEN COAL
WOOD
HOUSE YARD
LARDER
BOOTS AND KNIVES
LARDER
BRUSHING ROOM
CHINA STORE
W.C.
CORRIDOR
PORCH
SCULLERY
SERVANTS' HALL
KITCHEN
STRONG ROOM
BEDROOM
BUTLER'S PANTRY
BEDROOM
W.C.
LAVATORY
BEDROOM
EAST ENTRANCE
BOUDOIR
MAIN STAIRS
HALL
DINING ROOM
SMOKING ROOM
DRAWING ROOM
MAIN ENTRANCE
OUTER HALL
ROSE GARDEN
PLAN OF GROUND FLOOR.
SCALE OF FEET
HORTON PRIORY:
KENT.
Reference. The New Work [1903-05] is shewn in solid black. The Old Work is shewn by the hatching.
(A) Tudor Stair with doorway at gallery level inserted in Norman work in 15 cents. (B) West window [Norman] of South gable of Church. (C) Part of Old [Norman] blocking of West responds of South arcade of nave. (D) Window formed of part of a Lancet 13th cent. one. (E) Part of arch and sill of 13th cent. window in Norman west front of Church. (F) Two arched openings 15 cents. (G) Garderobe. (H) 15 cents doorway on site of former Norman window positions of which shewn. (J) Remains of Norman window. (K) 15 cents fireplace. (L) 15 cents formed partitions and doorways. (M) 15 cents windows [three with stone mullions]. (N) 15 cents window. (O) 15 cents window removed from here to East gable of new south wing. (P) 15 cents fireplace.
SCHOOLROOM
BEDROOM
BATHROOM
LINEN
BEDROOM
W.C.
STORE
ANTE
BEDROOM
OLD ROOM
MAIN STAIRS
BEDROOM
BEDROOM
BEDROOM
BEDROOM
BEDROOM
GALLERY
UPPER PART OF HALL
PLAN OF FIRST FLOOR.
SCALE OF FEET
George Hornblower F.R.I.B.A.
ARCHITECT
6 ADELPHI TERRACE
STRAND W.C.
HORTON PRIORY, KENT: ALTERATIONS & ADDITIONS, Mr. GEORGE HORNBLOWER, F.R.I.B.A., ARCHITECT.
THE BUILDER, MARCH 28, 1903.



cement and sand grout is quite suitable for this purpose, but for an absolutely first-class job a grout must be used which, unlike ordinary cement, will not shrink in setting. Such a cement which will satisfy these conditions is on the market, known as "Wren's fusible mineral cement." This cement requires a certain amount of skill and care in application as it is run in hot, but it is very effective, and, besides forming a substance of metal-like hardness, it increases slightly in bulk during the process of hardening. Such cement can be used in places where perhaps molten lead would otherwise have had to be used.

Steel Sectional Materials.

Except in really first-class specifications there is far too much ambiguity and evasion allowed in regard to the quality of steel sectional material to be supplied in constructional building work. Buyers are in the habit of taking for granted that if they specify British Standard Sections they will get British steel. Nearly all Continental mills now have rolls cut to British Standard profiles—or sizes; thus "materials to be British Standard" means nothing, or if it is meant to mean something it does not sufficiently define it. The source of manufacture, or the particular process of making adopted, does not as a rule much concern an intending purchaser, nor unless he understands why it should, can he see any reason why he should so concern himself.

These reasons will be stated as briefly as possible. All structures are designed to a given, or if not a given a generally-accepted, factor of safety, usually 4. It follows logically that the quality of the material used must be known and must be satisfactory under test. But more than this, there must be satisfactory reasons for taking it for granted that the rest of the material not tested—and this will of necessity form the bulk of the work—is of incontestably similar and uniform strength. This can by no means be assumed, hence the wisdom of clear direction to a proper and not abridged specification. The specification to which it is generally intended to refer is that issued by the "British Engineering Standards Association," and its correct title is the "British Standard Specification for Structural Steel for Bridges, etc., and General Building Construction." This specification insists, amongst other things, not only on stated profiles and weights per ft., etc., upon breaking strength and percentage of elongation, etc., but also upon the process of manufacture of the steel itself. It is in this respect in particular that the provisions of this specification are so frequently ignored.

It may be deduced from this specification that what is known as "15 A" steel should be used—not only for bridgework but for all structural building material of ¼ in. thick and over. Now, "15 A" steel is specified as being made by the open-hearth acid or basic process—a process adopted now by practically all the leading British steel manufacturers. But on the Continent the usual process is that known as the "Thomas Basic" process, and, in fact, except in isolated instances, there are practically no Continental steel firms manufacturing by the process approved by the specification mentioned. The "Bessemer Basic" or "Thomas Basic" system does not give the same continuity of manufacture required and depends on physical observations for determining the proportions of phosphorus, etc. It is not to be expected that consistent results will be obtained by such material under test, and though one or two tests may show results up to requirements the bulk untested may conceal much faulty material. Hence the wisdom of the British Standard Specification, which insists on the process of manufacture as well as in giving requisite mechanical tests.

It may not be known generally that "shell discard steel" was used largely for rolled sections during the war—a steel highly brittle and quite unsafe for indiscriminate use. Continental bolts and rivets, as far as the writer's experience goes, are even more unsatisfactory, and as the bolted and riveted connections determine the strength of any structure such uncertain materials should never be allowed. The writer acted as technical witness in an important case tried recently at the Birmingham Assizes, in which the rejection of a large consignment of Continental bolts and nuts was upheld by the Court, the judge describing the materials as showing the "gravest breach of contractual responsibility" which had ever come before him. The importance of proper supervision of orders and inspection of materials cannot be exaggerated.

Wrot-iron Plates and Sectional Material.

It is generally admitted that wrot iron resists corrosion much better than mild steel, though its tensile strength is not so great. Again, there is a difficulty in getting the large sizes of plates and bars now in use made in wrot iron. In wrot iron the grain—almost negligible in mild steel—is as important in working in it as the grain in wood is to the carpenter. Dock gates, tie rods, etc., for pier and sea work are made in wrot iron, as also are bar fencing, ornamental gates and railings, etc. Pressed gutters are also, if specified, made in this material. It will be seen how important it is that the consultant handling any such work should state the requirements when ordering.

"Rustless" Steel.

This is, of course, better known in the manufacture of domestic cutlery, but big developments are taking place in its manufacture for industrial purposes, and already it has been applied to the manufacture of turbine blades, and Sheffield metallurgists are searching for cheaper methods of manufacture. There is little doubt that we shall see in time the introduction of rustless steel in some modified form or other for sectional material; the greatest drawback to the latter as now made is its perishable nature through susceptibility to corrosion. The annual cleaning and painting bill on any large structure is a very great item.

Timber.

For horizontal framing (rails), and for purlins used in conjunction with H steel stanchions and steel roof trusses, timber is a feature often worthy of serious consideration. This will be dealt with later.

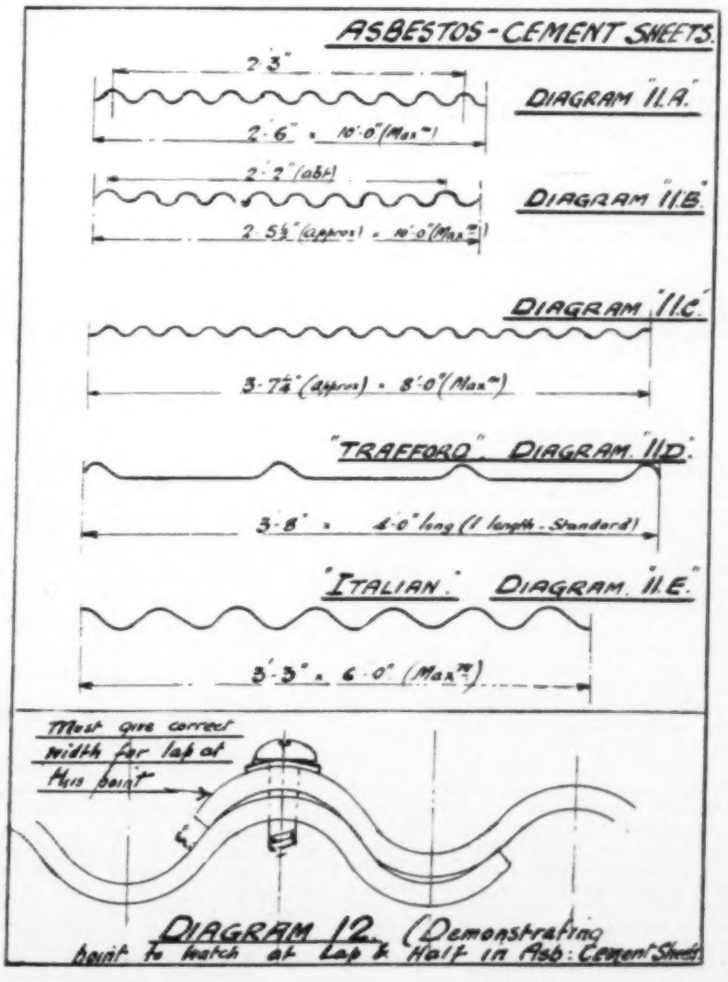
Roof Covering Materials.

Galvanised Corrugated Sheets.

In constructional building work the usual range is from 26 to 18 gauge—*i.e.*, from just over 1-64 in. to a little under 1-16 in. thick. It is sound practice to use a heavier gauge on the roof than on the sides. The district where the building is to be erected is all-important when fixing the type of roof covering to be used. In the impurely charged air of the manufacturing districts the life of galvanised corrugated sheets is short, and if they are to be used their thickness must be increased. For general purposes 22-gauge on roof and 24-gauge on sides may be considered the usual limits.

It is important that the engineer should fix what laps will be required, as if this is not stated many firms quoting will do so on single side laps. For a watertight roof double side laps should be specified; though for sides a single lap is sufficient.

A purchaser buying cheap lots of galvanised corrugated sheets may very easily be badly


ASBESTOS-CEMENT SHEETS.
2'3"
DIAGRAM "II.A."
2'6" = 10'0" (Max.)
2'2" (abt.)
DIAGRAM "II.B."
2 5½" (approx.) = 10'0" (Max.)
DIAGRAM "II.C."
3'7¼" (approx.) = 8'0" (Max.)
"TRAFFORD" DIAGRAM "II.D."
3'8" = 4'0" long (1 length - Standard)
"ITALIAN." DIAGRAM "II.E."
3'3" = 6'0" (Max.)
Must give correct width for lap at this point
DIAGRAM 12. (Demonstrating point to watch at Lap & Half in Asb: Cement Sheets

let down. On inspection at sheet mills the inspectors reject sheets for various defects—poor corrugations, being out of square, defective galvanising—shown in cracks and blisters, growth or reduction in the standard 3-in. pitch, etc. These, known as "throw-outs," are often purchased cheaply, and resold to innocent buyers who think they are getting cheap lots. So-called galvanised iron sheets are generally galvanised steel sheets, though from the point of view of longer life the former would be better.

First-class sheets are made from close-annealed steel sheets. They should be capable under test of being bent double and closed down by hammer without showing signs of fracture, and the specification for galvanising should insist on this being done with best-class virgin spelter, containing a minimum of 99 per cent. pure zinc, the weight of zinc on all surfaces being not less than 1 oz. per sq. ft.

But galvanised sheets by themselves far too readily transmit heat from the sun's rays, and again are very cold in winter. It is not much use bothering about internal heating arrangements for buildings of this nature. If the building is to be heated then it is better to face some alternative kind of covering.

Asbestos Cement Sheets.

Asbestos cement corrugated sheets are greatly superior in this respect, being made of a material practically non-conducting of heat. At the present time these can be purchased at about 3s. 6d. per sq. yd., whilst galvanised sheets, 22-gauge, would cost about 2s. 6d. per sq. yd. But it must be borne in mind that asbestos corrugated sheets necessitate almost double the number of purlins, and often involve considerable breakages. The reputed thickness of these is ¼ in. The Crown Agents for the Colonies, however, are using these extensively for their work, having found that in hot countries these sheets are infinitely preferable, and thus they have faced the greatly increased cost involved in crating. Asbestos cement sheets are almost as difficult as glass to handle and to ship.

The æsthetic point of view is not considered sufficiently by the constructional engineer, but in passing it may be mentioned that this material may be procured in slate blue and terra-cotta red, as well as in natural grey. Red-tiled roofs to a building sheeted at the sides in asbestos cement (natural grey) are very effective and an immense improvement. It is of great importance to insist on sheets being seasoned before dispatch from works, as the material hardens and toughens with age. There are various makes of asbestos cement sheets on the market, and all have their different advantages; but the principal variations from type are those known as Trafford tiles and Italian pattern. Diagram 11 (*a*), (*b*), and (*c*) shows a section through three types of ordinary sheet; (*d*) section through Trafford tile; (*e*) section through Italian pattern. Diagram 11 (*a*) shows sheets finishing at sides exactly as do galvanised corrugated sheets, and from these can be got either single or double lap. Diagrams 11 (*b* and *c*) show sheets so constituted as to finish with 1½-in. laps, thereby saving slightly at sides.

An important trade difference in this class of sheet, as compared with galvanised corrugated sheets, is that a 2 ft. 6 in. sheet in the latter material means 10/3 in. corrugations, or 2 ft. 6 in. centres of end corrugations. In asbestos cement sheets the overall width of sheet is stated, and in Diagram 11 (*a*) it will be seen that the sheet 2 ft. 6 in. wide is really only 2 ft. 3 in. centres of end corrugations.

If sheets are required to mesh with galvanised corrugated sheets (as, for instance, when this material is used for side sheeting, but for the lower tier, where kicks and consequent breakages result) galvanised iron is better, the only sheet which conforms to the same pitch and is possible to use in this way is as shown in Diagram 11 (*a*). The great drawback in the 1½-in. lap sheets is that slight variations in overall width during manufacture take place. This means that the seam screws are brought too near the edge, and eventually the material cracks at these points. (See Diagram 12.)

The covering capacities of the various sheets shown in the diagrams are as follows, the figures given representing the actual effective covering capacity obtained from 100 sq. ft. of material bought. The comparisons take into account the trade length of sheets, the overall widths, and the ½, 1½, or 2-in. laps, according to type of sheet. Also, although certain sheets can be obtained in 10 ft. lengths, 7 ft. is taken in comparison, as being more desirable to agree with economical spacing of purlins.

For Every 100 sq. ft. of Sheeting Bought.

Type.	Effective covering obtained. sq. ft.
Galvanised corrugated sheets (single lap)	87
Galvanised corrugated sheets (double lap)	78
Diagram 11 (*a*) (single lap) ...	83½
Diagram 11 (*a*) (double lap) ...	74
Diagram 11 (*b*) (lap and a half)...	80
Diagram 11 (*c*) (lap and a half)...	83
Diagram 11 (*d*)	79
Diagram 11 (*e*) (half lap)... ...	84

[*Note.*—The Italian pattern sheets have a reputed thickness of only 7/32 in. The manufacturers of this type recommend closer spacing of purlins than is specified for other makes.]

The fixing details for this material will be dealt with later.

(To be continued.)

RATE COMPLICATIONS AND THE HOUSING PROBLEM.

The letter by Mr. Holtom in our issue of January 12 concerning the housing problem and unemployment in the building trade deals chiefly with rating reform, his contention being that housing has "been sacrificed to the pernicious system of taxing building, through owners and occupiers, to provide funds for purely national services which make up the bulk of charges on local rates." This assertion resolves itself into the problem of what is a national as distinct from a local service, and we are at once confronted with anomalies in the existing arrangements. Are infectious diseases and tuberculosis national or local charges, and what is the principle which decides that scarlet fever is of local concern but tuberculosis a national charge? The tendency of the Geddes' report is not to relieve the local authorities but to make them increasingly responsible for raising the money expended in their districts. Thus, while it might be agreed that the diminution of infectious or contagious diseases must be of national moment, yet it is equally convincing to say that local authorities must be responsible for raising at least a percentage of the money they expend, since this effort tends to eliminate waste, to promote efficiency, and generally to induce a more active interest in the health and conditions, including housing, of their respective areas. As regards unemployment, it would clearly be unworkable to remove this responsibility entirely from the rates, because so much of the relief work entailed is of local benefit, and it would appear that if we are to avoid further bureaucracy local authorities must continue to administer relief for local unemployment.

There is much to be said for the plea that elementary education is in reality a national charge, and it represents the greatest expenditure of the kind that is still incurred by local authorities. In many ways it would appear to be more equitable and satisfactory if the whole of this burden were to fall on the taxpayer and not partly on the householder, the administration being run directly under the Board of Education. The problem of the relationship between national and local services is, however, now being thrashed out by the Departmental Committee on Exchequer Grants, and no relief can, therefore, be expected through legislation until its report is issued, which will probably be in some two months' time.

As an immediate remedy Mr. Holtom joins in voicing a growing demand for the type of indirect subsidy referred to in our recent leading article: the relief from rates for new houses for a period of years. This has the advantage that it directly assists the occupier of the house, and consequently that it is not effective till the house is completed and occupied. But, as we have already pointed out, where the erection of these houses entails new roads and services, which eventually fall on the other ratepayers, such charges must be kept down to an absolute minimum, and these points must also be part and parcel of any town-planning scheme. Indirectly, an exemption from rates will assist in inducing the future owner to finance the building of new houses, and this in itself is desirable provided that the site, standard, and character of such houses conform with the requirements and amenities of the neighbourhood.

Should such a plan be adopted some special modification would be necessary where the houses thus exempted were not occupied by their owners but leased on weekly tenancies. Any arrangement tending to emphasise the distinction between rent and rate would be of value. Nothing has contributed more to the difficulty of this class of property than the rate compounded system, which makes the landlord entirely responsible both for the collection of rates and for the loss incurred by arrears and bad debts. The weekly payment rarely differentiates between what goes to the landlord and what goes to the rate charges. Usually the husband leaves the lump-sum to his wife, who puts it under the clock or in a vase until the collector calls, hurriedly signs the rent book, and takes away the total amount due. Where a house is let off in rooms the complication of showing the exact percentage due for rates on each set of rooms is too great to be attempted, and there consequently exists a large mass of ratepayers quite unaware of the contribution they themselves make towards local taxation, careless of their responsibility, and uninterested in local welfare. In addition, the confusion of paying rent and rate under one heading has been largely responsible for much of the misunderstanding that exists between landlord and tenant, and has added to the complications and financial difficulties of this type of ownership. Some practical reform in rate collection for weekly tenancies is overdue, and any plan of rate exemption on new houses for a period of years would have the advantage of hastening the consideration of the whole question.

LONDON MASTER BUILDERS' SPORTS ASSOCIATION.

League table up to and including March 17.

	P.	W.	L.	D.	Goals. F.	A.	Pts.
Perrycobow ..	9	8	1	0	28	10	16
Minter	7	6	1	0	20	8	12
Holancube ..	6	3	3	0	9	11	6
Holloway ..	8	2	6	0	8	16	4
Trocoll ..	8	2	6	0	7	20	4
Higadillo ..	6	1	5	0	7	16	2

Last Saturday:—Holloway, 2; Holancube, 0.

IDEAL HOME EXHIBITION.

In connection with the Ideal Home Exhibition at Olympia, which concludes to-morrow (Saturday), we give the following further descriptions of the stands:—

HEATING AND LIGHTING.

Jones & Attwood, Ltd.

Messrs. Jones & Attwood, Ltd. (Titan Works, Stourbridge) exhibit the "Domestikatum" Boiler, which provides an abundance of hot water for all household requirements, together with facilities for light cooking. There are also shown the "Batheater" apparatus, combined boiler and storage cylinder for providing a continuous supply of hot water for domestic purposes; the "Cultivatum" and "All-night" boilers for greenhouse and motor house heating and the "Bonfire" Boiler for central heating installations, etc.

Candy & Co., Ltd.

Messrs. Candy & Co., Ltd., 87, Newman-street, Oxford-street, London, W.1, show a selection of their "Devon" Fires. It is claimed that the "Devon" Fire on its utilitarian side takes advantage of an established scientific factor in fuel combustion which results in considerable fuel economy and an extensive diffusion of heat in the room in which it may be fixed. The "Devon" Fire in its decorative effect can be produced to fit in with any colour scheme and with any style of decoration. Messrs. Candy have also on show examples of their decorative pottery, which is styled "Wescontree Ware."

Thos. Potterton.

Mr. Thomas Potterton, Ravenswood-road, Balham, exhibits a selection of the standardised types of "Victor" Gas Boilers, and gives a working example of a system supplying hot water for general domestic use. A small installation for warming purposes, with circulating radiators heated by gas, controlled automatically, is in operation as an instance of supplementary heating equipment. "Thermostats," for the automatic regulation of gas consumption, both water-type and atmospheric-type, can be seen in action. The "Victor-Combination" Boiler, using coke or other smokeless fuel, or gas, is designed for private houses where a kitchen range is not installed.

Spensers (London), Ltd.

Messrs. Spensers (London), Ltd., 6, London-street, Paddington, W.2, demonstrate what it is possible to do with petrol air gas. Their stand is divided into three sections: (*a*) Lighting, heating, and cooking section, where they show generators, fittings, and other equipment, including radiators, cookers, gas fires, etc., suitable for country houses, hotels, schools, etc.; (*b*) bungalow section, where may be seen the firm's latest small equipment for bungalows and cottages; (*c*) commercial section, where it is demonstrated how petrol air gas is used for commercial purposes, comprising blow lamps, brazing irons, vulcanisers, muffles, forges, etc., worked without additional air pressure.

British and North British Pipeless Central Heating, Ltd.

The stand of the British Pipeless Central Heating, Ltd., 54, Victoria-street, S.W.1, and North British Pipeless Central Heating, Ltd., 57-61, Pershore-street, Birmingham, and 89, Bridge-street, Manchester, illustrates systems of central heating in two forms—the "Canadian Wonder," suitable for use in a basement, with a grating in the floor of the hall or lounge, and the "British Wonder," which is suitable for use in a house without a basement, and has the grating placed in the wall of the hall. The "British Wonder" shown has been specially designed for the small house of six or seven rooms.

Triplex Foundry, Ltd.

Visitors to the stand of the Triplex Foundry, Ltd., Great Bridge, Staffs, have an opportunity of seeing the Patent Triplex grates at work. Attention is specially drawn to the large cooking oven and large boiling hot closet on top of oven. The bath water is automatically heated at the same time as the oven. The "Worker Grate" has been designed to give the working man's wife a thoroughly good cooking oven, an abundance of hot water and a clean and tidy open fire—all with an economical consumption of fuel.

Samuel Smith & Sons, Ltd.

The "Patent Foresight Range" is the prominent exhibit on the stand of Messrs. Samuel Smith & Sons, Ltd., Beehive Foundry, Smethwick. Among the advantages claimed for this range are that it cooks food satisfactorily, ensures a good supply of hot water at all times, and enables several boiling utensils to be in use at the same time. It is further claimed that the fuel bill is reduced by 50 per cent., while another advantage is that it is easily converted into an open fire. The flues are easily cleaned, and the range is made to stand long and hard wear. Other exhibits include interiors, registers, mantel registers, cooking stoves, Keystone fire, and general builders' castings.

Robert Jenkins & Co., Ltd.

Messrs. Robert Jenkins & Co., Ltd., Rotherham, show in actual use the Eco combined hot water boiler and gas cooker, size No. 2, connected to "Kal" Double Hot Water Tank, 30 gallons capacity, and heating a radiator and hot water tap on sink. A No. 6 Eco Boiler and Cooker, fitted for gas, and No. 2 Eco, fitted for electricity, are also shown, together with Kalor Hot Water Boiler No. 2 and Kalor Boiler No. 0 with hot closet.

The Interoven Stove Co., Ltd.

The exhibit of the Interoven Stove Co., Ltd., 156, Charing Cross-road, London, W.C.2, consists of the "Interoven" (Pascall's Patent) convertible cooking and heating stove, which cooks the meals, provides an ample supply of hot water for baths and domestic purposes, and a cosy fire, consuming only one scuttle of coal per day. It can be instantly converted from a cooking stove to an open fire sitting-room grate. A special feature of the exhibit is the new "Super Interoven" which has a larger oven than the original pattern, and boiler which works tank or cylinder up to 50 gallons capacity. "Bewty" and "Bewty Minor" Expanding Barless Fire Fronts (Pascall's Patent) provide a ready and inexpensive means for converting old-fashioned sitting and bedroom stoves into modern economical slow-combustion grates.

Ewart & Son, Ltd.

Messrs. Ewart & Son, Ltd., 346-350 Euston-road, N.W.1, demonstrate their geysers, showing instantaneous hot water service from the "Califont" to bath, basin, lavatory, etc. The geysers are heated by gas and oil. A moderate price bathroom complete with fittings of the most modern type, a display of sanitary fittings and nickel-plated bathroom accessories, new model lavatory basins, and Ewart's "Emperor" smoke cure for smoky chimneys are also shown.

Bratt, Colbran, & Co., and The Heaped Fire Co., Ltd.

A feature of the exhibit of Messrs. Bratt, Colbran, & Co., and the Heaped Fire Co., Ltd., 10, Mortimer-street, London, W., is one of the firm's well-known fireplace suites erected in the centre of the stand. This clearly demonstrates the "Heaped" Fire in action. Various other suites are shown, which illustrate the different treatments to which the Fire can be adapted. It should be added that the "Heaped" Fire has been used in Government and other housing schemes, and the firm announce appreciable reductions in prices.

BUNGALOW SECTION.

W. H. Gaze & Sons, Ltd.

The stand of Messrs. W. H. Gaze & Sons, Ltd., Kingston-on-Thames, and 10, Conduit-street, shows an original treatment for a bedroom. The colour scheme is unique, as also are the general fitments. It is rightly termed "A bedroom of the future." The garden adjoining has been so arranged to make the most of a limited space, showing how a simple treatment can be made effective. An old brick sundial and neatly planted beds of pink hyacinths and tulips form the colour scheme. A small rock garden adds considerably to the whole effect. The exhibits give an idea of what can be seen at Messrs. Gaze's permanent Exhibition House and Gardens at "The Gazeway," Portsmouth-road, Surbiton, S.W.

William Duncan Tucker & Sons, Ltd.

The exhibit of Messrs. Wm. Duncan Tucker & Sons, Ltd., Lawrence-road, Tottenham, N.15, comprises a high-class ornamental gable-fronted span roof greenhouse, heated complete, and stocked with plant, showing the house in actual use, and a garden summerhouse, of an ornamental and useful design and size, suitable for a modern suburban garden at an attractive price. A comprehensive display of their garden frames, in convenient sizes, are also shown.

Partridge's Models, Ltd.

On the stand of Partridge's Models, Ltd., 4 & 5, Mason's-avenue, London, E.C.2, may be seen scale models which show at a glance the internal and external construction of bungalows, houses, or buildings. Several sectional models of houses built or being built on various estates are also exhibited. A section of the stand is devoted to the sale of *Builder* publications, etc., and the firm's model of "Old Westminster Palace" is also on view.

The British Roofing Co., Ltd.

The British Roofing Co., Ltd., Premier House, 150, Southampton-row, London, W.C.1, and H. Burke & Co., Ltd., 20, Page-street, S.W.1, exhibit a small garage, the walls and roof of which are constructed with "Alligator" asbestos-cement sheets. This material is fire resisting, economical, and easily handled. They also show samples of other roofings in which they specialise. The floor of the garage is laid with "Burkenite" (H. Burke & Co., Ltd.), jointless and fireproof flooring which is warm and soft to the tread, can be laid in any colour, and is guaranteed for ten years.

Bell's Poilite and Everite Co., Ltd.

The Poilite standard bungalow has been specially devised to provide as compact a dwelling as possible, both for economy in construction and for reducing work of the housewife to a minimum. All plumbing and sanitary work is kept in the same part of the house, so as to reduce the cost to a minimum and simplify the drainage system. Some advantages claimed are that it solves the servant problem; there is no upkeep expense; the design is in good taste, and will harmonise with any rural surroundings, and the bungalow is fireproof.

Y. J. Lovell & Son.

Messrs. Y. J. Lovell & Son, 6, Bathurst-street, W.2, exhibit a brick built bungalow, which is the outcome of collaboration with Messrs. Douglas G. Tanner and Arthur L.

Horsburgh, A.R.I.B.A., of Birmingham, and is an attempt to provide at moderate cost a small artistic and substantially built house.

Frewen Cavity Brick Co., Ltd.

A cavity brick bungalow is exhibited by the Frewen Cavity Brick Co., Ltd., Lincoln House, High Holborn, W.C. This is built of Frewen double air cavity bricks 6 in. in width, and is planned in regular bungalow style, with one floor only. It has cream coloured walls and roofs covered with red Marseilles type tiles. The accommodation consists of a central sitting-room with hall, a well-proportioned living-room, and a breakfast parlour of the American style adjacent to the kitchen, with three bedrooms and a bathroom occupying one wing.

Nissens, Ltd.

At the stand of Messrs. Nissens, Ltd., Finsbury-court, Moorgate, London, E.C.2, a "Nissen" patent circular tent is shown. The type exhibited has a double roof, the outer covering being of steel and the inner (ceiling) lining and side wall panels of ten-test fibre board, which can be finished in any style of decorative colouring. This newly-designed type, which is modelled on the same lines as the all-steel "Nissen" Tent, is suitable for hot climates by reason of the non-conductive character of the fibre board and the dead air space between the roof and ceiling.

Vi-Board (Sales), Ltd.

Vi-Board (Sales), Ltd., 58, Pall Mall, S.W.1, show a convertible bungalow, designed by Messrs. Constantine & Vernon, F./A.R.I.B.A., to reduce labour to a minimum, and to make use of every inch of space. It is constructed almost wholly of Vi-board, which is fire-resisting, insulating against heat and cold, hygienic, rot-proof, and damp-proof. In the day time the living-room is a large airy apartment, the wide doors of each bedroom shutting off the beds from view, thus increasing the space for the living-room itself. At night these doors being closed, each bedroom becomes self-contained, with fitments in lieu of furniture. Only the living-room contains movable furniture.

Garden Cities and Town-Planning Association.

A tour to the Lower Rhone Valley is being arranged by the Garden Cities and Town-Planning Association in May, it being proposed to visit Avignon, Arles, Nimes, Aigues-Mortes and Aix. The party will leave London on Thursday, May 17, and will return during the week-end, May 26 to 28. Applications for inclusion in the party should be sent to the Secretary, 3, Gray's Inn-place, W.C.1.

Incorporated Church Building Society.

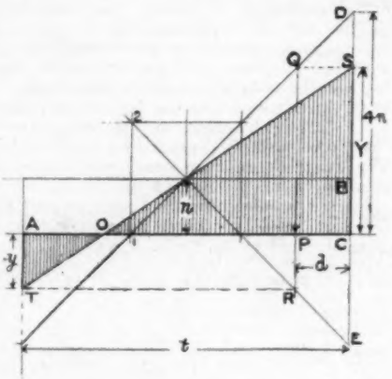
At the monthly meeting of the Incorporated Church Building Society, held at 7, Dean's-yard, Westminster Abbey, recently, grants were made towards building the churches at Bitterne Park, Church of the Ascension, Southampton, £400; Ilford, S. Andrew, Essex, £450; and West Bromwich, S. Andrew, £200; and towards enlarging or repairing the churches at Dymock, S. Mary, Gloucester, £25; Eastchurch, All Saints, Kent, £30; Ellesmere Port, Christ Church, Chester, £75; Hunslet, S. Jude, Leeds, £30; Petham, All Saints, Kent, £25; Preston Capes, S. Peter and S. Paul, Rugby, £20; Rede, All Saints, Suffolk, £25; Spreyton, S. Michael, Devon, £40; and Wiggenhall, S. Mary the Virgin, Norfolk, £30. Grants were also paid for works completed at Kilburn, S. Augustine, £75; Southsea, S. Matthew, £250; Wrenthorpe, S. Anne, Yorks, £50; Stretford, S. Peter, Hereford, £25; and Wilmington, S. Michael and All Angels, Kent, £65. In addition to the above £340 was paid out of Trust Funds towards small repairs to twenty-two other churches. Grants were also made towards building two mission churches at Cwm, Penmachno, Carns, £35; and Thornton Heath, S. Paul, Surrey, £30.

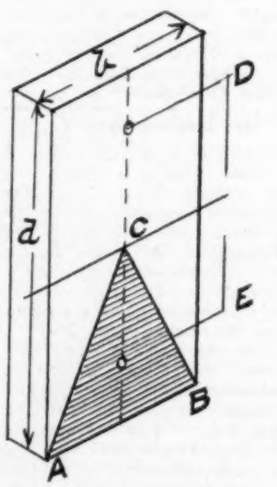
BUILDING SURVEYORS' AND INSPECTORS' ASSOCIATION.

A GENERAL meeting of the Building Surveyors' and Inspectors' Association was held at Leeds, on March 10.

Mr. W. J. Stone, M.R.S.I. (Chairman) welcomed the gathering, and expressed his satisfaction at so successful a meeting, having regard to the fact that it was only the second meeting in accordance with the educational policy of the Association. He particularly welcomed the architects and district surveyors from surrounding districts. Reference was also made to the general policy of the Association and the necessity of having this well supported on sound educational lines; hence the desire for the Association to enlarge its sphere of work in this direction.

MR. F. O. CRESWELL (Liverpool) then gave a lecture, entitled "Notes on the Mechanics of Construction." The subject was treated





graphically with blackboard demonstrations, the lecturer laying especial emphasis on the need for more careful consideration of shear stresses. The need for this was illustrated in the various demonstrations that were given. It was shown that a clear deduction of shear stresses could be obtained from rough sketches, the results being obtained from a study of first principles. Hints were also given respecting scales which enabled actual stresses to be read off in place of bending moments. The determination of stress diagrams to which Maxwell's reciprocal figures were not applicable was dealt with.

An interesting feature was the lecturer's method of dealing with pressures on masonry sections. Below are two examples of his method of dealing with this problem:—

An attempt to derive the moment of resistance and moment of inertia of rectangular beams by reference to the parallel case of water pressure.

Suppose the lower half of the section to be subjected to water pressure. Then we have:—

Total pressure = area × depth of C. of G. × pressure per unit.

$$= \frac{bd}{2} \times \frac{d}{4} \times p = \frac{bd^2}{8} \times p$$

= equivalent area × maximum pressure.

= area of triangle $ABC \times f$, where $f = \frac{pd}{2}$

$$= \frac{bd}{4} \times f$$

The arm is the same in both cases $= \frac{2d}{3}$

Multiplying total pressure × arm in both cases, we get:—

$$\frac{bd^2}{8} \times \frac{2d}{3} \times p = \frac{bd}{4} \times \frac{2d}{3} \times f$$

$$\left(\frac{bd^3}{12}\right) p = \left(\frac{bd^2}{6}\right) f$$

$I \times p = Z \times f$. Hence formulæ required.

$$Y = \frac{2N}{t}\left(2 - \frac{3d}{t}\right) = \text{maximum pressure.}$$

$$-y = \frac{2N}{t}\left(\frac{3d}{t} - 1\right) = \text{minimum pressure.}$$

The solution of these equations for the distribution of stress on a cemented bed admits of a simple graphic construction as follows:—Make $AC = t$ and set n = mean stress at its centre. Suppose the wall one unit long, then tn = total press. on the bed = N.

Construction.—Draw a rectangle on the middle third of t, having $1 \cdot 2 = 2n$ as altitude. Draw its diagonals intersecting a vertical through C, in D and E. Let the resultant press. act at any point P. Draw a vertical line through P, cutting the diagonals in Q and R; horizontal lines through Q and R determine S and T. Join $S.T$. Then $CS = Y$ and $AT = -y$.

Taking AC at datum line, ordinates will give the intensity of compression or tension, as case may be, on any part of the bed. If below AC the ordinate will be minus and indicate tension on the cementing material. P may act at any point; when at C the maximum compression $= 4n$ (d being $= o$), and the maximum tension—$2n$, as indicated by the diagonals first drawn. The intensity area, or the algebraic sum of the areas, multiplied by n, will always $= N$.

Mr. George Chambers (Leeds) proposed a hearty vote of thanks to the lecturer, which was seconded by Mr. Charles B. Howdill (Leeds) and carried unanimously.

The business meeting of the Association followed, when applications were made by several prospective members.

Architects' and Surveyors' Assistants' Professional Union.

The following social programme for April has been arranged by the Metropolitan Branch of the Architects' and Surveyors' Assistants' Professional Union:—April 10: Lecture by Mr. E. F. Etchells (President, Institute of Structural Engineers), chairman, Mr. Maurice E. Webb, F.R.I.B.A.; Subject, "Simple Tests for Concrete"; 6.30 p.m., at Prince Henry's Room, 17, Fleet-street (first floor). April 21: Visit of inspection to the "Corner House" extension, Coventry-street, Piccadilly; 2.30 p.m.; tea provided. April 28: Visit to works of Messrs. Mather & Platt, Ltd., with a demonstration of the "Grinnell" automatic fire sprinkler; 2.30 p.m, at 14, Great Smith-street, Westminster; tea provided. All interested are invited to attend these events, whether members of the union or not. Tickets may be obtained from Mr. J. A. Gould, at the office of the Union, 36, Victoria-street, S.W.1.

NEW BUILDINGS IN LONDON.

Paddington.—BATHS.—Messrs. Perry & Co. (Bow), Ltd., are the successful contractors for the new baths and wash-houses at Paddington. The plans have been prepared by Mr. Herbert Shepherd, of Queen's-road, London, W. 2. The site covers an area of 40,000 sq. ft. in Bishop's-road, and the work embraces swimming baths and laundry, slipper baths (first and second class), with disrobing cubicles. The swimming bath has been so arranged that it can be used as a public hall. It is surrounded by a gallery. In addition to these works, the contract also provides for boiler-house, &c. The work is estimated to cost £85,000.

Long-acre.—GARAGE.—Messrs. Perry & Co. (Bow), Ltd., have secured the contract for the erection of a large garage and motor depot in Long-acre, for Messrs. Salmons & Son, motor coach-builders. Plans have been prepared by Mr. W. W. Gibbings, of Birmingham. The estimated value of the contract is £15,000.

Marylebone.—CONVERSION.—Messrs. Perry & Co. (Bow), Ltd., are the contractors for the conversion of the casual wards into a central relief station, with offices and flats over, for the Marylebone Board of Guardians. The architects for this work are Messrs. Constantine & Vernon, and the value of the contract is about £10,000.

Richmond.—SALE.—Messrs. Penningtons, of Richmond, have secured a purchaser for the National Orphan Home, Ham Common.

Commercial-road. — MEMORIAL HOSTEL. — Messrs. G. E. Wallis & Sons, Ltd., are the contractors for the Empire Memorial Hostel, Commercial-road, Limehouse, which will be a memorial from the Empire to those men of both sea services who lost their lives in the war. The new hostel will contain about 240 beds, a restaurant, and recreation rooms. The architects are Mr. T. Brammall Daniel and Mr. H. W. Parnacott.

Barnet.—HOSPITAL EXTENSION.—The committee of the Barnet Cottage Hospital have purchased "Cedar Lawn," a commodious house, with about two acres of grounds, in Wood-street, Barnet, with the intention of transferring the hospital from the present buildings on Barnet-hill, which have become totally inadequate. The new premises cost £3,400, and it is estimated that another £12,000 will be required to adapt them for the hospital.

New Coventry-street.—REBUILDING.—Nos. 7 and 8, New Coventry-street, are to be rebuilt.

St. James-street. — DEMOLITION. — Byron's house, No. 8, St. James-street, is to be demolished.

Wimbledon.—STRUCTURAL WORKS.—Structural work, &c., is to be carried out at the Children's Home, Wimbledon-common, S.W.19, for the General Purposes Committee of the United Services Fund.

Holborn.—ALTERATIONS.—Messrs. John Marsland & Sons, Ltd., 56, South Molton-street, W.1, are carrying out alterations at the First Avenue Hotel, Holborn. The sub-contractors are:—Fire-escape stairs, Haywards Ltd., Southwark; fire-proof glazing, Luxfer Prism Syndicate. The architects are Messrs. Riley & Glanfield.

Piccadilly.—BANK.—The contract for the new branch for the London Joint City & Midland Bank, to be erected on the site of the old St. James's Vestry Hall, Piccadilly, has been secured by Messrs. E. A. Roome & Co., Ltd., of Hackney, E.9.

Westbourne-street, S.W.1.—ALTERATIONS.—At 29-30, Westbourne-street, S.W. 1, Messrs. L. & W. Whitehead, Ltd., Clapham-road, S.W.8, are carrying out the conversion of dwelling house and public house into a house for the clergy of St. Mary the Virgin, Graham-street. The works consist of entire reconstruction, converting the two buildings into one, and adding one further story, to the plans and specification prepared by Mr. H. S. Goodhart-Rendel, 60, Tufton-street, S.W.1 The sub-contractors are: Slating, by Messrs. Wiggins & Co.; hand-painted tiles, by Messrs. Martin Van Straaten & Co.; electrical work, by Messrs. P. J. Driscoll & Co., Ltd.; lifts, by the Express Lift Co., Ltd.; steelwork, Messrs. Measures Bros., Ltd.; heating, Messrs. J. Weeks & Co.

Shadwell.—HOUSES.—At the corner of Love-lane and High-street, E.1, Messrs. L. & W. Whitehead, Ltd., are erecting new blocks of dwellings for the Corporation of London. These works consist of two blocks, containing in all thirty-four tenement dwellings, under the direction of Mr. Sydney Perks, City Surveyor. The sub-contractors are: steelwork, Messrs. Dorman, Long & Co., Ltd.; heating, the Wembley Heating Co., Ltd.; plastering, the Grano-Metallic Paving & Plastering Co., Ltd.; granolithic work, Stuart's Granolithic Co., Ltd.; and stonework, the Metropolitan Stone Co., Ltd.

St. Katharine's Way, E.1.—ALTERATIONS.—The reconstruction of offices at the Red Lion Brewery, for Messrs. Hoare & Co., Ltd., is being undertaken by Messrs. L. & W. Whitehead, Ltd., under the supervision of Mr. J. E. Jefferson, architect to the Brewery.

Tower Bridge.—NEW YARD PAVING.—Messrs. L. & W. Whitehead, Ltd., are repaving the yard to Anchor Brewery for Messrs. Courage & Co., Ltd.

Kensington.—MOTOR GARAGE.—Messrs. L. & W. Whitehead, Ltd., are erecting a motor garage at the rear of "Hand and Flower" Hotel, 1, Hammersmith-road, W. The sub-contractors are: Steelwork, Messrs. Archibald D. Dawnay & Sons, Ltd.; Carrara ware, Messrs. Doulton & Co., Ltd. The architect is Mr. F. M. Kirby.

Westminster Bridge-road, S.E.1.—ALTERATIONS.—Alterations and additions are being carried out by Messrs. L. & W. Whitehead, Ltd., to the "New Inn." This house is under reconstruction, an adjoining shop being added. The sub-contractors are: Steelwork, Messrs. Measures Bros., Ltd.; tiling, Messrs. Byron & Co. The architect is Mr. F. M. Kirby.

Hendon.—LABORATORIES.—In Blind-lane and Bell-lane Messrs. L. & W. Whitehead, Ltd., are erecting research laboratories, &c., a one-story building roofed with asbestos, consisting of physical and chemical laboratories, library, plant room and dark room. The architect is Mr. O. W. Box, A.R.I.B.A.

Catford.—HOUSES.—Mr. Geo. Watt, Stanstead-road, S.E.6, is to erect houses in Ravensbourne Park, Catford, S.E.6.

Kingsway.—ALTERATIONS.—Messrs. Whitbys, Ltd., Eagle-street, High Holborn, W.C.1, are altering the two lower floors of the premises, 95–97, Kingsway. The shop fronts are by Messrs. Sage & Co. The new tenants are Messrs. Slingsby & Co., truck and carrier makers, of Old-street.

NEW BUILDINGS IN SCOTLAND.

Whiteinch.—LIBRARY.—The Glasgow Corporation Libraries Committee has authorised the purchase of land at the corner of Oswald-street and Park-drive South, Whiteinch, as a site for a public library.

Helensburgh.—HOSPITAL EXTENSIONS.—The Directors of the Victoria Infirmary are appealing for funds to enable them to install an X-ray apparatus. Considerable extensions to the building are about to be begun.

Dundee.—HOUSES.—The Corporation Housing Committee has approved of sketch plans of twenty-two blocks of eighty-eight flatted houses to be erected at Dunhope. The Town Council have under consideration a scheme to erect a bandstand and terracing with 2,000 seats in the Baxter-park, at an estimated cost of £2,000.

Falkirk.—CHURCH.—The Dean of Guild Court has passed plans submitted by the trustees of Camelon Parish Church to enlarge and reconstruct the church in Glasgow-road, Camelon, at an estimated cost of £3,700. Plans were also passed for a bungalow for Mr. John B. Harrison, Thistle-street, Camelon, to be erected on High Station-road, Falkirk. The Falkirk Iron Co., Ltd., also had plans passed for a laboratory and photographic studio at their works.

Airdrie.—HOUSES.—The Town Council has decided to press the Board of Health to sanction the erection of twenty-one houses immediately, with a view to the improvement of an insanitary area. It is proposed to erect 241 houses altogether within a period of two years from the date of the Board's approval. The Town Council has under consideration the erection of a new public library.

Lennoxtown.—HOUSES.—The District Committee have decided to appeal to the Board of Health for permission to build another fourteen houses at Lennoxtown, near Glasgow.

Hawick.—HOUSES.—The Board of Health has sanctioned the loan of £13,000 in addition to the £40,000 already authorised to build more houses to complete the housing scheme.

Whiteinch. — ALTERATIONS. — The Glasgow Corporation Parks Committee recommends that certain alterations and improvements be made in the Fossil-grove, Whiteinch. The proposals include the construction of a roof on the existing building in the Grove, the erection of a heating chamber and new heating apparatus, the fitting up of two gangways, and the erection of two porches.

Hamilton.—TOWN HALL.—The Town Council proposes to erect a new Town Hall. The late Mr. W. Meek, of Hamilton, bequeathed £25,000 for the purpose.

Kilmarnock.—HOUSES.—The Town Council has decided to proceed with a new housing scheme on a site at Scott-road, and the Board of Health has approved of the plans, with tenders amounting to £12,209 14s. for the erection of thirty houses. The Council has already carried out a scheme at Holehouse-road of 160 houses, and a further scheme is also contemplated.

Edinburgh.—PLANS.—The Dean of Guild Court has passed plans, submitted by the Trustees of the Hospital in Spring-gardens, for a maternity hospital facing King's-park, at a cost of about £30,000. The Trustees of the Royal Victoria Hospital for Tuberculosis have been granted permission to erect a laboratory and X-ray block at Smithfield, Liberton. The cost of the building, exclusive of apparatus and fittings, will be about £6,000. Plans have been passed for the following:—Two semi-detached villas, a cottage, a house and garages, and a transformer at MacDonald-road for the Corporation; new tennis pavilion at Northfield-broadway; conversion of a car depot at Tollcross for the purposes of electric cars and formation of new entrances at a cost of about £10,000; the erection of three self-contained houses at Netherby-road, Trinity; erection of a bungalow at Colinton; conversion of self-contained house at 11, Moray-place into two houses; formation of workshops for Church Army Labour and Lodging-House Committee at 26, Broughton-place; a recreation room for the Free Breakfast Mission Trustees. A petition to erect a stand for the Hibernian Football Club at Easter-road is under consideration.

Ayrshire.—PLANS.—The Northern District Committee of the Ayrshire County Council have passed the following plans:—Double cottage of four apartments each at Caledonia-road, Stevenston; bungalow at Thirdpart, Skelmorlie; two three-apartment houses at Ardneil Farm, West Kilbride; factory at Laight-road, Beith; twelve three-apartment houses for the Kilbirnie Housing Scheme; bungalow at Caldwell-road, West Kilbride; two two-apartment houses at Dirrans, Kilwinning.

Glasgow.—HOSPITAL EXTENSIONS.—At the annual meeting last week of the workmen delegates to the Royal Samaritan Hospital for Women, Glasgow, it was stated that plans for further necessary hospital extensions had been completed and were awaiting the approval of the directors. The estimated cost was £50,000, exclusive of furnishings. The Corporation Parks Committee recommends the demolition of Ibroxholm-lodge, Bellahouston-park, and that the City Engineer be authorised to prepare plans of a new lodge.

NORTHERN POLYTECHNIC INSTITUTE.

The annual speech-night of the Department of Architecture, Surveying and Building of the Northern Polytechnic Institute took place last week. Mr. R. L. Roberts, Chairman of the General Purposes Committee, was in the chair.

Mr. Paul Waterhouse, M.A., in the course of an address, said an architect should be a man of all-round knowledge. Life was a struggle against time, and no man's life was a harder struggle than that of the architect who tried to educate himself. Sir Christopher Wren was never in a polytechnic, or an architect's office, and he was denied the opportunity of foreign travel. It was not until he went to Paris to escape the Plague that he made a complete study of the architectural work of other men. How he became an architect was more or less a mystery, and very nearly a miracle. But he was highly educated, and a good learner, and that was why he was able in London, after the Great Fire, out of his general and special knowledge, to accomplish what was required of him. To the architect no knowledge came amiss, not even a knowledge of literature; it was not a waste of time while training to acquire a knowledge of things that were not pure architecture.

Viscount Burnham said he had had the opportunity, on his recent visit to Jamaica, of seeing what were called the "great houses," buildings constructed 200 years ago with the characteristics of our own Georgian houses, and illustrating the sound traditions of English builders. With those he contrasted the more modern "sky-scrapers" and great business buildings of New York, pointing out how the former were necessitated by the circumscribed area of the city, and how the latter provided a lesson in adaptability to requirements from which this country might learn much to its advantage.

Mr. T. P. Bennett, Head of the Department, said without the co-operation of the outside interests, architects' associations, master builders' associations, and trade unions, the department could not be a success. Everyone who had anything to do with building was backing up the department. Sympathy, personal assistance, and practical financial assistance were all being given in a very fine manner. The staff worked tremendously hard and backed him up splendidly. Every student trained in the department, with the exception of about two, had secured appointments when they left, and that, really, was the acid test. Students were compiling graphs giving costs of building, and these were the only things of their kind, so that they were doing something to help the industries.

Viscountess Burnham presented the awards of which we give the following:—

Senior Day School.—Prize for working drawings, A. Neave; prize for measured drawings, A. Neave; best set of four esquisse-esquisse, Bertram Lock; studio drawings, V. A. Brown; order composition, Dennis Harrington; order composition, Mr. Fisher; working drawings, Mr. H. Broadwater; steelwork, Mr. W. G. Wincop; first prize, plasterwork, Mr. J. Ward and Mr. J. Lincoln; masonry, Mr. G. Rainbird; letter cutting, Mr. G. Moore; the Richard Robert's prize for the best piece of craftwork, Mr. W. E. Keys.

Dr. R. S. Clay, Principal of the Institute, also spoke.

A vote of thanks to Viscountess Burnham, the speakers, and the judges, was moved by the chairman.

Mr. J. Murrey, Secretary of the National Federation of Building Trades Operatives, seconded, and Mr. E. Brown, Director of the London Master Builders' Association, and Mr. Davies supported.

Correction.

In our report of the Manchester Building Trades' Exhibition on March 9 the address of the Patent Tip-up Bath Co. was given as 37, Broad-street, Manchester. This should have been 39, Broad-street.

RATES OF WAGES IN THE BUILDING TRADE.

The following are the rates of wages in the building trade in England and Wales. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Brick-layers' Labourers.	Masons' Labourers.	Plasterers Labourers.
Aberdare	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Accrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Altrincham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Ashton-under-Lyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Barnsley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Barrow-in-Furness	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Barry	1/8	1/8	1/8	1/5	1/5	1/5	1/5	1/0½		
Bath	1/5	1/5	1/5	1/4½	1/4½	1/4½	1/4½	1/0½		
Bedford	1/4½	1/4½	1/4½	1/4½	1/9	1/10	1/9	1/4½		
Birkenhead	1/9	1/9	1/9	1/9	1/8	1/9	1/8	1/3		
Birmingham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Bishop Auckland	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Blackburn	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Blackpool	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Bolton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Bournemouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Bradford	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Bridgwater	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	0/11½		
Brighton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Bristol	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Burnley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Burton-on-Trent	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2		
Bury	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Cambridge	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Cardiff	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Chatham	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0		
Chelmsford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Cheltenham	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½		
Chester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Chesterfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Colchester	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Coventry	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Crewe	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2		
Darlington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Derby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Doncaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Dudley	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2		
Durham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
E. Glam.(Mon. Vall.)	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Eastbourne	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Exeter	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Folkestone	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0		
Gloucester	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/0½		
Grantham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2		
Grays	1/8	1/8	1/8	1/8	1/8	1/8	1/7	1/3		
Grimsby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Great Yarmouth	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0		
Guildford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Halifax	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Harrogate	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Hartlepools	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Hastings	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0		
Hereford	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/0½		
Huddersfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Hull	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Ipswich	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Lancaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Leamington Spa	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2		
Leeds	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Leicester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Lichfield	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2		
Lincoln	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Liverpool	1/9	1/9	1/9	1/9	1/9	1/10	1/9	1/4		
Llanelly	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
London	1/8	1/8	1/8	1/8	1/8	1/8½	1/7	1/3		
Loughborough	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Luton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Maidstone	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0		
Manchester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Mansfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Merthyr Tydfil	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Middlesbrough	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Newcastle-on-Tyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Newport, Mon.	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2		
Northampton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/0½		
Norwich	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3		
Nottingham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½		
Oakham	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/3		
Oldham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½		
Oxford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/1½		
Plymouth	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/3		
Pontypridd	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½		
Portsmouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3		
Preston	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½		
Reading	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3		
Rochdale	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0		
Rochester	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/2		
Rugby	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/0½		
St. Albans	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3		
St. Helen's	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2		
Scarborough	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/3		
Sheffield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2		
Shrewsbury	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/0½		
Southampton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Southend-on-Sea	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3		
Southport	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
South Shields	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Stockport	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Stockton-on-Tees	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Stoke-on-Trent	1/8	1/8	1/8	1/8	1/8	1/9	1/8	1/0½		
Stroud	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4	1/3		
Sunderland	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Swansea	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½		
Swindon	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/0½		
Taunton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Torquay	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½		
Tunbridge Wells	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3		
Wakefield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2		
Walsall	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/3		
Warrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
West Bromwich	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Wigan	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½		
Windsor	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3		
Wolverhampton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2		
Worcester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/3		
York	1/8	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2		

(For rates of wages in the Building Trade in Scotland, see page 501.)

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained.

BUILDING AND PAINTING.

MARCH 25.—**Cardiff.**—DEMOLITION WORKS.—Demolition of twelve shops, one public house, and other property, and clearing the site, for the Duke-street improvement works. Mr. Cecil G. Brown, Town Clerk, City Hall, Cardiff.

MARCH 26.—**Barnsley.**—PAINTING.—Cleansing and painting the Lambert and Laundry blocks at the Kendray Hospital, for the T.C. Borough Engineer, Fairfield House Offices, Barnsley.

MARCH 26.—**Bromley.**—PAINTING.—For painting and repairing of offices, for the Board of Guardians. Clerk, Union Offices, Bromley.

MARCH 26.—**Colchester.**—PAINTING.—Cleaning and painting portions of the Essex County Hospital. Messrs. Goodey & Cressall, architects, St. Peter's-chambers, Colchester.

MARCH 26.—**Darfield.**—ALTERATION.—Alteration to the Council Chamber at the Council Offices, for the U.D.C. Surveyor, Darfield.

MARCH 26.—**Helmsdale.**—TOWER.—For clock tower, as war memorial. Mr. J. A. Hosie, architect, Lairg.

MARCH 26.—**Hemsworth.**—POINTING, &C.—Pointing and repairs to boundary walls and fives court at the Hemsworth Secondary School, for the West Riding E.C. Education Department, County Hall, Wakefield.

MARCH 26.—**Huddersfield.**—HOMES.—Erection of Children's Homes, The Leas, Scholes, for the Huddersfield Board of Guardians. Messrs. J. Berry & Sons, architects, 3, Market-place, Huddersfield.

MARCH 26.—**Manchester.**—ALTERATIONS.—For alterations to the Nurses' Home at Monsall Hospital, for the T.C. City Architect, Town Hall, Manchester. Deposit £1 1s.

MARCH 26.—**Ryde.**—REPAIRS, &C.—For repairs and decorations at small Town Hall, for the T.C. Borough Surveyor, Ryde.

MARCH 26.—**St. Marylebone.**—ALTERATION.—Alteration to the first-floor lavatory accommodation, East Block, St. Marylebone Workhouse, Northumberland-street, W.1, for the Board of Guardians. Messrs. Constantine & Vernon, architects, 82, Mortimer-street, Regent-street, W.1. Deposit £1.

MARCH 26.—**Sydenham, S.E. 26.**—ALTERATIONS, &C.—**For alterations and additions to the South-Eastern Hospital for Children, in Sydenham-road, Messrs. Stoner & Sons, 63 & 64, New Broad-street, London, E.C. 2. Deposit £3.**

MARCH 26.—**West Hartlepool.**—CONSTRUCTION.—Construction of the front (rear of) Seaton Carew, for the T.C. Mr. Francis Durkin, Borough Engineer, Municipal Buildings, West Hartlepool.

MARCH 26.—**Woking.**—ALTERATIONS.—**Alterations and repairs to farm house and buildings at Moor-lane Farm, Woking, for the Surrey Agricultural Committee. Mr. C. B. Harding, County Land Agent, Kingston-on-Thames. Deposit £1 1s.**

MARCH 27.—**Atherstone.**—ENGINE HOUSE, &C.—For erection of engine house and cottage, &c., at Warton, for the R.D.C. Mr. H. J. Coleby, surveyor, 102, Long-street, Atherstone. Deposit £2.

* MARCH 27.—**Birmingham.**—HOUSES.—Erection of non-parlour type houses under the following contracts: Contract 119—Burlington-road, Small Heath, 38 houses; Contract 127—Perry Common-road, Erdington, 120 houses; Contract 128—Tyseley, 74 houses; for the Public Works and Town Planning Committee of the City of Birmingham. Mr. Herbert H. Humphries, M.Inst.C.E., City Engineer and Surveyor, Council House, Birmingham. Deposit £1 1s. in respect of each contract.

MARCH 27.—**Kirkcaldy.**—PAINTING AND GLAZING.—For the glazier and painter works of 22 houses of three rooms, erected at Glencraig site, Lochore, for the District Committee. Messrs. William Williamson, F.R.I.B.A., & Geo. B. Deas, Kirkcaldy. Deposit £1 1s.

MARCH 27.—**North Ormesby.**—HOSPITAL EXTENSION.—Alterations and extensions to St. Cuthbert and St. Vincent's Wards of the North Ormesby Hospital Mr. James Forbes, Lic.R.I.B.A., 19, Grange-road West, Middlesbrough.

MARCH 27.—**Ossett.**—PAINTING.—For the decoration of the inside of Ossett-street side Working Men's Club. Mr. J. H. Green, Secretary, Ossett.

MARCH 27.—**Sheffield.**—SUB-STATIONS.—(*a*) Rebuilding of transformer store and drying-out shop in Ellin-street; (*b*) erection of transformer sub-station in Banner Cross-road, Ecclesall, for the T.C. Mr. S. E. Fedden, General Manager, Commercial-street, Sheffield.

MARCH 27.—**Stokenchurch.**—CLUB—For the erection of Village Club. Messrs. Baillie Scott & Beresford, 8, Gray's Inn-square, W.C.1.

MARCH 27.—**Thurnscoe.**—COTTAGE.—Erection of a caretaker's cottage, for the U.D.C. Mr. T. Bull, Council Offices, Thurnscoe. Deposit £2 2s.

MARCH 28.—**Ashford.**—REPAIRS, &C.—For internal repairs, painting, &c., at the Assembly Rooms, for the U.D.C. Mr. Wm. Terrill, surveyor, 5, North-street, Ashford, Kent.

MARCH 28.—**Belfast.**—HOUSES.—Erection of houses on the Ulsterville, Stranmillis, and Skegoniel sites, for the T.C. Messrs. W. H. Stephens & Sons, 13, Donegall-square North, Belfast. Deposit £1 1s.

MARCH 28.—**Broad Haven (Pembroke).**—RENOVATIONS.—For internal and external renovations to Nolton Haven Congregational Church. Mr. W. J. Canton, Nolton Haven, Broad Haven, Pembroke.

MARCH 28.—**Carmarthenshire.**—ERECTION OF DWELLINGS, &C.—For erection of four small holdings sets of buildings at Llandawke, near Langhame, for the Carmarthenshire Small Holdings Committee. Mr. W. Vincent Morgan, A.R.I.B.A., County Architect, Council Offices, Carmarthen.

MARCH 28.—**Darfield.**—For the works in connection with the alterations and additions to the Council Chamber, Council Offices, Darfield. The Council Surveyor, Darfield.

MARCH 28.—**Dartford.**—AMBULANCE STORE.—For new building, to be used as ambulance store, at Joyce Green Hospital, Dartford, Kent, for the Metropolitan Asylums Board. Office of the Board, Embankment, E.C.4. Deposit £1.

MARCH 28.—**Derby.**—HOUSES.—Erection of nine pairs non-parlour type houses, for the T.C. Mr. C. A. Clews, Borough Surveyor, Babington-lane, Derby. Deposit £1 1s.

MARCH 28.—**East Ashford.**—VARIOUS WORKS.—Erection of bathrooms, painting of wards, and installation of hot water apparatus and electric lighting at the Isolation Hospital, Willesborough, for the R.D.C. Surveyor, Albemarle-road, Willesborough.

MARCH 28.—**Malton.**—EXTENSION.—Extension of the Primitive Methodist Schoolroom, Norton, Malton. Mr. J. R. Jefferson, 96, Commercial-street, Norton.

MARCH 28.—**Manchester.**—SUB-STATION.—Erection of a complete building, including foundations, steelwork, drains, machine foundations, &c., for the new Ancoats sub-station, for the T.C. Mr. F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester. Deposit £2 2s.

MARCH 28.—**Sligo.**—HOUSES.—Erection of eight blocks of two houses each at Cleveragh-road, and four blocks of two houses each at Ballytivnan, for the T.C. Mr. John Shea, Town Clerk, Town Hall, Sligo. Deposit £2 2s.

MARCH 28.—**Yoker.**—HOUSES.—For the various works in connection with the erection of 28 houses (10 blocks) to be erected at Harvey-street, Yoker. Mr. James A. McCallum, District Clerk, 15, West George-street, Glasgow. Deposit £1 1s. for each schedule.

MARCH 29.—**Aberystwyth.**—PAVILION.—For erecting pavilion for Aberystwyth Bowling Green Co., Ltd. Mr. G. T. Bassett, A.R.I.B.A., Architect and Surveyor, Aberystwyth.

MARCH 29.—**Eastbourne.**—COTTAGES.—Erection of ten cottages at Alfriston, for the R.D.C. Mr. B. Stevens, 24, Cornfield-road, Eastbourne. Deposit £1 1s.

MARCH 29.—**Felixstowe.**—CONVALESCENT HOME.—Erection of a new Convalescent Home (Bartlet Bequest) at Felixstowe, for the Board of Management of the East Suffolk and Ipswich Hospital. Mr. H. Munro Cautley, A.R.I.B.A., The Thoroughfare, Ipswich. Deposit £25.

MARCH 29.—**Southampton.**—POLICE COTTAGE.—Erection of a police cottage at Chandler's Ford, for the County of Southampton. Mr. A. L. Roberts, County Architect, The Castle, Winchester. Deposit £1 1s. must be made by cheque, payable to Hants County Council, and crossed "Lloyds Bank Ltd., Capital & Counties Branch, Winchester."

MARCH 31.—**Chapel-en-le-Frith.**—PAINTING.—For inside painting in the infirm wards and infirmary at the Poor-Law Institution, for the Board of Guardians. Master at the Institution.

MARCH 31.—**Edinburgh.**—MAINTENANCE.—For maintenance of Corporation properties (various trades) City Architect, Edinburgh.

MARCH 31.—**Evenwood.**—PAINTING.—For painting interior of Primitive Methodist Chapel. Mr. W. Watson, 9, Delaware-avenue, Evenwood, Durham.

MARCH 31.—**Maryhill.**—EMPLOYMENT EXCHANGE.—Erection of an Employment Exchange at Maryhill, for H.M. Office of Works. Architect, H.M. Office of Works, 4–5, Drumsheugh-gardens, Edinburgh. Deposit £1 1s.

APRIL 2.—**Chepstow.**—HOUSE, &C.—(*a*) Erection of a house and farm buildings on Holding St. Pierre No. 9, near Crick, Chepstow; (*b*) repairs and alterations to farm buildings at the Bradbury Farm, Crick. Mr. A. Every-Clayton, County Land Agent, No. 2, Gold Tops, Newport.

* APRIL 3.—**Gravesend.**—SHEDDING, OFFICES, &C.—Erecting shedding, offices, stands and other works for the Agricultural Show to be held at Gravesend. R. J. Beacon (Major), Secretary, Kent County Agricultural Society, Otham, Maidstone, Kent.

APRIL 3.—**Knottingley.**—VILLA.—Erection of villa residence at Knottingley, for Mr. T. Jackson. Mr. J. R. Earnshaw, architect, Cliffe-street Chambers, Bridlington. Deposit £2 2s.

APRIL 3.—**Worcester.**—HOUSES.—Erection of 42 houses, for the T.C. Mr. W. Ransom, City Surveyor, Guildhall, Worcester.

APRIL 4.—**Barry.**—ERECTION OF 36 HOUSES.—For erecting 36 parlour-type maisonettes at Jenner-road, Barry, under the Central Estate Housing scheme, for the U.D.C. Mr. E. R. Hinchcliff, F.S.I., Architect and Town-Planning Surveyor, Public Offices, Barry. Deposit £2.

APRIL 4.—**Seaham Colliery.**—ALTERATIONS.—Alterations to station buildings at Seaham Colliery, for the London and North Eastern Railway Co. Mr. Stephen Wilkinson, architect, North Eastern Area, Irving House, Westgate-road, Newcastle-on-Tyne.

APRIL 4.—**South Glamorgan.**—PAINTING.—For cleaning down and painting bridges at Llanedarne, Pendoylan, Penmark, Radyr, St. Andrew's, St. George's, for the Cardiff R.D.C. Mr. William Farrow, Surveyor, 20, Park-place, Cardiff.

APRIL 4.—**West Hartlepool.**—ALTERATIONS.—Improvements at West Hartlepool Passenger Station, for the London and North Eastern Railway Co. Mr. Stephen Wilkinson, architect, North Eastern Area, Irving House, Westgate-road, Newcastle-on-Tyne.

APRIL 5.—**Dodworth.**—HOUSES.—For the whole of the works required in the erection of four pairs of houses, Thornby-avenue, Dodworth, for the U.D.C. Messrs. Dyson, Cawthorne & Coles, 10, Regent-street, Barnsley.

BUILDING TRADE WAGES IN SCOTLAND.*

THE following are the present rates of wages in the building trade in the principal towns of Scotland. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Brick layers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Brick-layers' Masons' Plasterers' Labourers.
Aberdeen	1/7	1/7	1/7	1/7	1/8	1/8½	1/4	1/- to 1/3
Airdrie	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Alexandria	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2
Arbroath	1/7	1/7	1/7	1/7	1/7	1/7	1/6½	1/1
Ayr	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Bathgate	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2
Blairgowrie	1/7	—	1/7	1/7	1/7	1/7	1/6½	—
Bo'ness	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2
Coatbridge	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Dumbarton	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2
Dumfries	1/6	1/6	1/6	1/6	1/8	1/8	1/6½	1/3 1/2½ 1/3½
Dundee	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Dunfermline	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2
Edinburgh	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Falkirk	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Fort William	1/6	1/6	1/6	1/6	1/6	1/6	1/6½	1/1½
Galashiels	1/6	1/6	1/6	1/6	1/6	1/6	1/5½	1/1½
Glasgow	1/8	1/8	1/8	1/8	198	1/8	1/6½	1/3
Greenock	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/1 to 1/3
Hamilton	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Hawick	1/6	1/6	1/6	1/6	1/8	1/6	1/6½	1/1½
Helensburgh	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Inverness	1/3½	—	1/3	1/4	1/4½	1/4	1/3½	10d. to 1/2
Kilmarnock	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Kirkcaldy	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2
Kirkwall	1/5	1/5	1/4	1/7	1/5	1/5	1/6½	1/2
Lanark	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Leith	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2
Motherwell	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Perth	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2
Stirling	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Stirlingshire (Eastern District)	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Wishaw	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3

* The information given in this table is copyright. The rates of wages in the various towns in England and Wales are given on page 500

April 5.—**Hastings.**—Houses.—Erection of 62 houses at Silverhill, for the T.C. Mr. Philip H. Palmer, Borough Engineer, Town Hall, Hastings. Deposit £2.

April 6.—**Cardiff.**—Repairs, &c.—For repairs, renovations, &c., at seven houses in Canton, Cardiff, for the Board of Guardians. Mr. R. Stephenson, Clerk, Union Offices, 11, Park-place, Cardiff.

April 7.—**Llanelly.**—Houses.—For erection of 60 parlour type houses on the Llanerch site, in blocks of two, as follows: Group 1, ten houses; Group 2, ten houses; Group 3, twelve houses; Group 4, fourteen houses; Group 5, fourteen houses. Fair wages and conditions of labour clauses in the agreement. Firm prices as regards material, but with variation in contract price to meet cost of labour alterations, the basic rates for such alterations being prevailing district rate on March 17, 1923. The work is for the Llanelly Borough Council and tenders may be for one or more groups or all houses. Borough Surveyor's Office, Llanelly. Deposit £2.

April 9.—**Harrogate.**—Stables.—Erection of new stables at the Gas Works, Ripon-road. Mr. Frank H. Robinson, Engineer, Gas Office, James-street, Harrogate.

April 9.—**Llanharan.**—Erection of 122 Houses.—For building of 122 houses for the Llantrisant & Rhymney Valley Housing Co., Ltd., at Llanharan. Messrs. Geo. W. Kenshole & W. Evans & Sons, Joint Architects, at Court Estate Office, Pencoed, or 30, Charles-street, Cardiff.

April 9.—**London, S.W.**—Structural, Repair, and Decorative Works.—Structural, repair, and decorative works required to be done at the Children's Home, Wimbledon Common, S.W. 19, for the General Purposes Committee of the United Services' Fund. Mr. Arthur H. Davis, F.S.I., M.R.San.I., 19, Hanover-square, W. 1. Deposit 5 guineas.

April 21.—**Carmarthenshire.**—Painting.—For colouring and painting the following schools, for the Carmarthenshire County Education Committee: In the Carmarthen Union—Malsybont, Drefachy, Cwmgwilli, Tumble, Philadelphia, Whitewill, Bankffosfelin, Cwmdaud; Llandilo Union—Saran, Garnant, Ystradowen, Nantygoes, Fairfach, Tolley, Culladdowen; Llandovey Union—Llandovey; Lampeter Union—Cwmbach; Newcastle Emlyn Union—Aftwallis, New Inn, Penrader, Llanpumpsaint; Llanelly Union—Bryn, Hendy, Furnace, Gwendraeth, Burry Port. Mr. W. Vincent Morgan, A.R.I.B.A., County Architect, Council Offices, Carmarthen.

No Date.—**Ailoa.**—Lavatory.—For the various works in connection with the erection of a ladies' lavatory in the Public Park, for the T.C. The Burgh Surveyor's Office, Bank-street.

No Date.—**Bursiem.**—Business Premises.—For rebuilding Nos. 58, 60, 62, High-street and Church-street, Goldenhill. Messrs. Ford and Slater, architects, Bursiem.

No Date.—**Carlisle.**—Additions.—Additions and improvements to farm buildings, Brisco. Mr. H. E. Ayris, architect, Carlisle.

No Date.—**Churwell.**—Masonry.—For the masons' and bricklayers' work required in the formation of war memorial gardens at Churwell. Messrs. T. A. Buttery & Son, architects, Morley.

✱No Date.—**Dorking.**—Additions and Alterations and Electrical Work.—Additions and alterations to the existing administrative buildings, &c., at the Hospital near Logmore-lane, Westcott. Deposit £2 2s. Also installation of an electrical lighting plant and wiring, &c., at the above, for the Dorking Joint Isolation Hospital Committee. Mr. William Shearburn, Architect, 39, South-street, Dorking.

No Date.—**Dublin.**—Arches.—Reconstruction of two piers and three arches of Taylorstown Viaduct, near Wellington Bridge Station, on the Waterford-Rosslare branch of the Great Southern and Western Railway. Messrs. J. F. Crowley & Partners, Government Consulting Engineers, 32, Nassau-street, Dublin. Deposit £1 1s.

No Date.—**Dumfries.**—Memorial Church.—For the erection of the Marist Brothers' war memorial church, St. Joseph's College, Dumfries. Mr. Charles J. Menart, F.I.A.Scot., 221, West George-street, Glasgow.

No Date.—**Hay.**—Alterations.—For carrying out alterations to "Brynmelyn," Hay, for Major Booth, D.S.O. Mr. J. Vaughan Richards, architect and surveyor, Crickhowell.

No Date.—**Kirk Sandall.**—Houses.—Erection of houses for Messrs. Pilkington Bros., Kirk Sandall, Doncaster. Messrs. Patrick Abercrombie & Thos. H. Johnson, joint architects, 20, Priory-place, Doncaster.

No Date.—**Middlesbrough.**—Alterations.—For alterations at the Middlesbrough Corporation Social Club, Southfield Villas. Secretary, at the Club.

No Date.—**Nottingham.**—Extensions.—Extensions to Sunday School premises in Patrick-road. Mr. A. E. Lambert, architect, 25, Park-row, Nottingham.

No Date.—**Pontefract.**—Business Premises.—Erection of business premises, house, shop, and outbuildings, Toll Hill, Pontefract. Mr. Fred Scatchard, architect, Midland Bank Chambers, Castleford. Deposit £2 2s.

✱No Date.—**Slough.**—Alterations and Additions.—Alterations and additions to the premises at 124, High-street, Slough, for Messrs. Timothy White & Co., Ltd. (Construction Dept.), 30, Chandos-street, Slough.

No Date.—**Stanningley.**—Extensions.—Extensions to Varley Mills, Stanningley, for the Leigh Mills Co., Ltd. Mr. Wm. Shackleton, architect, Manor House-street, Pudsey. Deposit £2 2s.

FURNITURE, MATERIALS, etc.

March 25.—**North Walsham.**—Tar, &c.—Supply of 16,000 gallons of tar or bituminous compounds and 400 tons of grit to the U.D.C. Mr. W. Morris, Surveyor, Bacton-road, North Walsham.

March 26.—**East Barnet Valley.**—Materials.—Supply of road materials to the R.D.C. Mr. H. York, Surveyor, Council Offices, New Barnet.

March 26.—**Feltham.**—Tar.—Supply of 20,000 gallons of tar to the U.D.C. Mr. H. W. A. Carter, Surveyor, Feltham.

March 26.—**Hemsworth.**—Materials.—Supply of broken whinstone, granite, limestone, slag, slag chippings, tar macadam, to the R.D.C. Mr. W. T. Lynam, Surveyor, Council Offices, Hemsworth.

March 26.—**Hunslet.**—Materials.—Supply of granite, limestone dust, kerbs and tar to the R.D.C. Mr. W. B. Pindar, Clerk, Leek-street, Hunslet, Leeds.

March 26.—**Ilkeston.**—Materials.—Supply of road and other materials to the T.C. Borough Surveyor, Town Hall, Ilkeston.

March 26.—**Ilkley.**—Road Materials.—Supply of tarred slag and tar to the U.D.C. Mr. J. M. Gameson, Surveyor, Town Hall, Ilkley.

March 26.—**Loughton.**—Materials.—Supply of tar, tar paving and granite chips to the U.D.C. Mr. H. White, Surveyor, Loughton.

March 26.—**Ossett.**—Materials.—Supply of materials, stores, workmen's tools, &c., to the T.C. Borough Surveyor, Town Hall, Ossett.

March 26.—**Sefton.**—Materials.—Supply of various materials to the R.D.C. Mr. F. Pool, 21, Evered-avenue, Walton, Liverpool.

March 26.—**Stockton.**—Materials.—Supply to the R.D.C. of Whinstone, tarred slag, slag, &c. Mr. W. Heslop, Surveyor, 16, Finkle-street, Stockton-on-Tees.

March 26.—**Tenterden.**—Materials.—Supply of road materials to the R.D.C. Mr. W. L. C. Turner, Surveyor, Tenterden.

March 26.—**Willesden.**—Concrete Tubes.—Supply of concrete tubes to the U.D.C. Mr. F. Wilkinson, Surveyor, Town Hall, Kilburn, N.W.

March 27.—**Dublin.**—Paving Setts.—Supply to the Dublin Port and Docks Board of paving setts. Mr. E. H. Bailey, Secretary, Office, Westmoreland-street, Dublin.

March 27.—**Great Crosby.**—Materials.—Supply of highway and other materials to the U.D.C. Mr. J. A. Wright, Surveyor, Offices, Coronation-road, Great Crosby.

March 27.—**Hazel Grove.**—Materials.—Supply of road and other materials to the U.D.C. Mr. G. Severn Doncaster, Surveyor, Council Offices, Hazel Grove.

March 27.—**London.**—Paints, &c.—Supply to the Madras and Southern Mahratta Railway Co. of 527 cwt. of paints, &c. (paints, pumice powder, 34,800 blocks of artificial pumice stone, &c.). Secretary, 25, Buckingham Palace-road, S.W. Charge £1 1s.

March 27.—**Uppingham.**—Road Materials.—Supply of granite and slag to the R.D.C. Mr. F. Oakley, Clerk, Uppingham.

March 28.—**Carshalton.**—Materials.—Supply of road materials to the U.D.C. Mr. W. Willis Gale, Surveyor, Council Offices, The Square, Carshalton.

March 28.—**East Ashford.**—Materials.—Supply of granite and flints to the R.D.C. Mr. J. T. Pullen, Mersham, Ashford, Kent.

March 28.—**Elham.**—Materials.—Supply of broken granite to the R.D.C. Mr. A. E. Price, Surveyor, Lyminge, Kent.

March 28.—**Irlam.**—Materials.—Supply of highway materials, to the U.D.C. Mr. W. H. Gamble, Surveyor, Irlam.

March 29.—**Bridge.**—Road Materials.—Supply of road materials to the R.D.C. Mr. S. Sladden, Surveyor, Littlebourne, Canterbury.

March 30.—**Hereford.**—Materials.—Supply of tools, tar laying, &c., to the C.C. Mr. G. H. Jack, County Surveyor, Hereford.

March 31.—**Alderley Edge.**—Materials.—Supply to the U.D.C. of road materials. Surveyor, Council Offices, Alderley Edge.

March 31.—**Edinburgh.**—Materials.—Supply to the Fire Engines Department of oils, paints, timber, tools, iron, steel, gasfitters' stores, bolts, and nuts, &c. Central Fire Station, Lauriston-place, Edinburgh.

March 31.—**Edinburgh.**—Materials.—Supply to Burgh Engineer's Department of cement, brick, and fireclay goods. Burgh Engineer, Police Chambers, Edinburgh.

March 31.—**Kiveton.**—Road Materials.—Supply to the R.D.C. of broken slag, granite and tarmacadam. Mr. F. Hewitt, Surveyor, Council Offices, Kiveton Park, near Sheffield.

March 31.—**Richmond (Yorkshire).**—Materials.—Supply to the R.D.C. of whinstone and slag. Mr. T. W. Beadle, Surveyor, North Cowton, Darlington.

March 31.—**Samford.**—Materials.—Supply to the R.D.C. of granite and slag. Mr. A. J. Haward, Clerk, 8, Museum-street, Ipswich.

March 31.—**Westhampnett.**—Materials.—Supply of road materials and tar to the R.D.C. Mr. A. W. Shorland, Surveyor, Pallant House, Chichester.

April 2.—**Clutton.**—Road Materials.—Supply to the R.D.C. of granite, tar macadam and limestone. Mr. T. Orchard, Surveyor, Hallstrow, Bristol.

April 2.—**Prestwich.**—Materials.—Supply of highway materials to the U.D.C. Surveyor, Town Hall, Prestwich.

April 3.—**Dover.**—Materials.—Supply of road materials to the R.D.C. Mr. C. Dacre Carder, Clerk, 17, Market-square, Dover.

April 6.—**New Romney.**—Tar.—Supply of 7,200 gallons of dehydrated tar to the T.C. Mr. W. Lamacraft, Town Clerk, New Romney, Kent.

April 9.—**Melton Mowbray.**—Materials.—Supply to the R.D.C. of 6,500 tons of X, XX and XXX broken granite, and 2,000 tons of XX and XXX broken slag Mr. Arthur H. Marsh, Clerk, Melton Mowbray.

ENGINEERING, IRON AND STEEL

March 26.—**London.**—Pipework, &c.—Supply and erection at Greenwich Power Station of (1) pipework (steam and feed), (2) motor driven feed pump, for the L.C.C. County Hall, Westminster-bridge, S.E. 1. Deposit £2.

March 26.—**Middleton.**—Repairs to Destructor.—Supply and fixing of three new furnace fronts and doors, also three sets of special blocks, and the stripping and relining of the destructor furnace, for the T.C. Borough Electrical Engineer, Electricity Works, Townley-street, Middleton.

March 26.—**Poole.**—Foundations.—For foundations and settings of boilers, &c., at pumping station, for the T.C. Mr. A. P. I. Cotterell, 17, Old Queen-street, S.W. Deposit £2 2s.

March 26.—**Rowley Regis.**—Fire Alarms.—Alterations, improvements and extensions of the fire alarm system, for the U.D.C. Mr. Daniel Wright, Clerk, Council House, Old Hill.

March 27.—**Aylesbury.**—Electric Lighting.—Installing electric light to various buildings at the Union House, for the Board of Guardians. Mr. Fred Taylor, architect, 7, Bourbon-street, Aylesbury.

March 27.—**Dublin.**—Concrete Mixer.—Supply to the Dublin Port and Docks Board of one concrete mixer with steam-driven engine. Engineer's Office, East Wall, Dublin.

March 27.—**Islington.**—Lighting.—For lighting the Liverpool-road depot of the B.C. with electricity. Superintendent, Cleansing Dept., Liverpool-road, N. 1.

March 27.—**London.**—Materials.—Supply to the Great Indian Peninsular Railway Co. of (1) copper plates and phosphor copper, (2) spare parts of locomotive engines, (3) ferro Prussiate paper, &c., (4) firebricks. Mr. R. H. Walpole, Secretary, 48, Copthall-avenue, E.C.2. Charge 10s. for 1 and 2; and 2s. 6d. for 3 and 4.

March 27.—**Manchester.**—Covering Pipes.—For the covering of steam and hot-water pipes with non-conducting material at the various establishments of the Guardians. Mr. Hargreaves, Supt. of Works, Union Offices, All Saints, Manchester.

March 27.—**Warrington.**—Tramway Crossings.—Supply of eight manganese crossings, 1 in 8, 5 ft. 6 in. for B.S.S. No. 3 Rail. Tramways Manager, Car Sheds, Mersey-street, Warrington.

March 28.—**Bedwellty.**—Electrical Works.—For supply and erection, for the Bedwellty U.D.C., of sub-station equipments, extra high tension transmission lines and low tension distribution systems. Mr. R. Howard Fletcher, M.I.E.E., Consulting Engineer, 3, Park-place, Cardiff.

March 28.—**Bristol.**—Staircases.—Provision and fixing of two fire escape staircases at Stapleton Institution, for the Board of Guardians. Mr. Thos. S. Lamb, Clerk, St. Peter's Hospital, Bristol.

March 28.—**Chichester.**—Tar Macadam Plant.—Supply to the West Sussex C.C. of a portable tar macadam drying and mixing plant. Mr. H. W. Bowen, County Surveyor, Chichester.

March 28.—**Kilkeel.**—Harbour Works.—Construction of North Pier, North Quay, inner basin wall, &c., and protective works to new outer breakwater and other subsidiary works at Kilkeel Harbour, for the Down C.C. Mr. R. J. Dickson, Secretary, Courthouse, Downpatrick. Deposit £2 2s.

March 28.—**Newbury.**—Roller.—Supply of 10-ton steam roller to the R.D.C. Mr. S. V. Pinniger, Clerk, Kendrick House, Newbury.

March 28.—**Saltash.**—Electrical Installation.—For installing electric light on the Ferry Bridge at Saltash-passage, for the T.C. Mr. Fred Et. Cleverton, Town Clerk, Saltash.

April 3.—**Dublin.**—Buckets.—Supply to the Dublin Port and Docks Board of 24 tipping buckets suitable for discharging coal, ore, and phosphates out of vessels. Engineer's Office, East Wall, Dublin.

April 4.—**London.**—Boilers.—Supply to the Metropolitan Water Board of four Lancashire boilers, piping, &c., at the Lea Bridge Pumping Station, Essex. Chief Engineers' Department, 173, Rosebery-avenue, Clerkenwell, E.C. 1. Deposit £3 3s.

April 7.—**Newport (Isle of Wight).**—Bridge.—Supply of a hand swing bridge, 12 ft. wide, 22 ft. 8 in. span, of bascule type or to swing horizontally, for the T.C. Mr. E. A. Slater, Borough Engineer, Newport.

April 10.—**Barking.**—Piping.—Supply and erection of the complete piping equipment for the Barking Power Station of the County of London Electric Supply Co. Mr. F. C. McQuown, Manager, Moorgate-court, Moorgate-place, E.C. Deposit £5.

May 3.—**Chile.**—Tools, &c.—Supply to Chilean State Railways of machinery and tools, nuts and bolts, &c. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

June 1.—**Calcutta.**—Aerial Ropeway.—Supply and installation of an aerial ropeway for the removal of the City refuse, for the T.C. Mr. James R. Coats, Chief Engineer, Central Municipal Office, Calcutta.

June 26.—**Queensland.**—Pumping Plant.—Supply to the Metropolitan Water and Sewerage Board of Brisbane, Queensland, of pumping plant for Mount Crosby Pumping Station. Department of Overseas Trade, 35, Old Queen-street, S.W.

No Date.—**Brampton.**—Heating.—Supply and erection of boiler, for the trustees of Brampton Wesleyan Church. Mr. E. G. Todd, Warren House, Brampton.

No Date.—**Cranstonhill.**—Heating Apparatus.—Supplying and fixing heating apparatus in St. John's Episcopal Church, Cranstonhill. Secretary, Wm. Gardner, 12, Dalhousie-street.

ROAD, SANITARY, AND WATER WORKS.

March 26.—**Bangor.**—Water Mains.—(*a*) About 1¼ miles of 9 in. cast-iron water mains; (*b*) special castings for same; (*c*) valves, hydrants, air valves, &c.; (*d*) labour excavating and refilling trenches, for the T.C. Water Engineer, Town Hall, Bangor.

MARCH 26.—**Bridlington.**—SEWERS.—Construction of 400 yards of 9 in. and 280 yards of 12 in. surface water sewers, for the T.C. Borough Engineer, 1, The Crescent, Bridlington. Deposit £3 3s.

MARCH 26.—**Castle Eden.**—SEWERS.—For laying 1,719 lineal yards 18 in., 15 in., 12 in., and 9 in. sewers at Horden Colliery. Mr. James Hamilton, Surveyor, Blackall Colliery Offices.

MARCH 26.—**Glyncorrwg.**—ROADS.—Completion of the roads on the Croeserw Building Site, Cymmer, for the U.D.C. Mr. W. P. Jones, Surveyor, Council Offices, Cymmer, Port Talbot. Deposit £1 1s.

MARCH 26.—**Ilford.**—ROADS.—Making-up, &c., Lynford-gardens, Seven Kings, for the U.D.C. Mr. H. Shaw, Town Hall, Ilford. Deposit £2 2s.

MARCH 26.—**Margate.**—ROADS.—For road tarring, for the T.C. Mr. E. A. Borg, Borough Surveyor, 13, Grosvenor-place, Margate.

MARCH 26.—**Nairn.**—WATERWORKS.—Construction of new waterworks, for the T.C. Messrs. Geo. Gordon & Co., civil engineers, Inverness.

MARCH 26.—**Rhondda.**—GAS AND WATER DEPARTMENTS SUPPLIES.—For supply to above departments of Rhondda U.D.C. of white lump lime, fire bricks, acid, retorts, silica bricks, oils, uniforms, clothes for labourers, &c. Mr. Octavius Thomas, Engineer and Manager, Gas and Water Offices, Pentre (Rhondda).

MARCH 26.—**Thurnscoe.**—WATER MAINS.—Laying of 8,486 lin yds. of 7-in. cast-iron water mains in Clayton-lane, for the U.D.C. Mr. Thomas Bull, Thurnscoe. Deposit £2 2s.

MARCH 26.—**Whitehaven.**—WATER SUPPLY.—Laying of steel and cast-iron water mains in the parish of St. John, for the R.D.C. Mr. W. J. Goode, Surveyor, Union Hall, Whitehaven. Deposit £1 1s.

MARCH 27.—**Steyning.**—SEWERS.—Construction of about 800 yards of 12 in. sewers and about 400 yards of 9 in. sewers, &c., for the R.D.C. Mr. F. Slaughter, Jarvis-lane, Steyning. Deposit £1.

MARCH 27.—**Surrey.**—SEWERAGE, &C.—Construction of the following works, which comprise: about 10 miles of stoneware and cast-iron sewers, brick, concrete and cast-iron manholes, flushing tanks, ventilating shafts and columns, cast-iron rising mains, air mains, engines, compressors, ejectors, ejector stations, engine houses, balancing, detritus, sedimentation, upward flow, storm, humus and other tanks, percolating filters, laying out storm water area, roads, paths, and other incidental works, for the Windlesham U.D.C. Major F. J. Mosa-Flower, civil engineer, 28, Victoria-street, Westminster, S.W., and Carlton Chambers, Bristol. Deposit £10. Bank of England Note.

MARCH 27.—**Wallsend.**—SANITARY.—Conversion of cell privies into water closets, for the T.C. Borough Surveyor, Town Hall, Wallsend.

MARCH 28.—**Houghton-le-Spring.**—ROADS.—Making-up of certain streets at Grasswell and Dubmires, for the R.D.C. Mr. B. Richardson, Surveyor, Council Offices, William-street, Houghton-le-Spring. Deposit £2 2s.

MARCH 28.—**Hull.**—PAVING.—For flagging and curbing round the new lavatory in Queen Victoria-square, for the T.C. Mr. F. W. Bricknell, City Engineer, Guildhall, Hull.

MARCH 28.—**Omagh.**—WATERWORKS.—Construction of works for improving the water supply in Urban District. Mr. J. H. H. Swiney, Avenue Chambers, Belfast. Deposit 10s. 6d.

MARCH 28.—**Rugby.**—ROADS.—For sewering, &c., in connection with the development of two estates, for the Rugby Provident Building Society. Mr. C. J. Newman, architect, 2, Henry-street, Rugby.

MARCH 28.—**St. Albans.**—MAIN DRAINAGE.—Laying of pipe sewers and reconstruction of outfall works at Wheathampstead, for the R.D.C. Messrs. H. Humphreys & Sons, 28, Victoria-street, S.W. Deposit £2 2s.

MARCH 28.—**Walton-on-the-Naze.**—ROAD.—Construction of a new road from the Parish Church to Frinton Railway level crossing, for the U.D.C. Mr. S. Nicholson, Clerk, Town Hall, Walton-on-the-Naze. Deposit £2 2s.

MARCH 29.—**Ferryside (Carmarthen).**—GROUND RESURFACING.—For re-surfacing with tar chippings playground about 800 yds. at Ferryside, or, alternately, price per ton tar chippings delivered to Ferryside Railway Station. Rev. R. James, St. Ismael's, Ferryside.

MARCH 29.—**Hathersage.**—GAS MAINS.—For laying gas mains at Bamford, Bradwell, Hope and Grindleford, for the Hathersage & District Gas Co. Mr. T. H. Brown, Manager, Gas Works, Hathersage.

MARCH 29.—**Langholm.**—SEWERS.—Relaying of existing sewers; the construction of a main intercepting sewer and branches, including an inverted syphon under the River Esk; the construction of sewage tanks, &c., for the T.C. Mr. Gilbert Thomson, 164, Bath-street, Glasgow. Deposit £2 2s.

MARCH 29.—**Macclesfield.**—SEWAGE PLANT.—Supply and erection of (1) four revolving distributors, (2) two sets of sewage screens, for the T.C. Mr. J. H. Edmondson, Sewage Manager, Prestbury, Macclesfield.

MARCH 29.—**Minehead.**—DRAINAGE.—Execution of Woodcombe main drainage, for the U.D.C. Mr. A. Douglas Barron, Surveyor, Council Offices, Minehead. Deposit £2 2s.

MARCH 29.—**Sheerness.**—TENNIS COURTS.—Laying down of five "all-weather" tennis courts on the sea front, for the U.D.C. Mr. F. R. Gray, Surveyor, Council Offices, Sheerness.

MARCH 30.—**Bothwell.**—ROADS.—Widening and improvement of the Brig Brae Mill Highway (Calder-road), in the parish of Bothwell, for the Lanark C.C. Mr. Robert Spittal, Road Surveyor, District Offices, Hamilton.

MARCH 30.—**Hamilton.**—ROADS.—Widening and improvement of the Meikle Earnock Highway, in the parish of Hamilton, for the Lanark C.C. Mr. Robert Spittal, Road Surveyor, District Offices, Hamilton.

MARCH 31.—**Bridlington.**—SEWERS.—Construction of 400 yards of 9 in., and 310 yards of 12 in. foul sewer, for the T.C. Borough Engineer, 1, The Crescent, Bridlington. Deposit £3 3s.

MARCH 31.—**Cowbridge.**—ROAD IMPROVEMENTS.—For improvement of the district road, Llantwit Major-Lechmore, for the Cowbridge R.D.C., the work to include excavations, metalling and ballasting, &c. Preferential employment for local men and wage conditions. Mr. G. E. Morris, Surveyor, Council Offices, The Institute, Cowbridge, Glam.

MARCH 31.—**Ebbw Vale.**—TAR-SPRAYING.—For tar-spraying about five to six miles of road, for the U.D.C. Local men, so far as is possible, to be employed and district rates paid. Mr. P. I. Davies, Engineer and Surveyor, Council Offices, Ebbw Vale.

MARCH 31.—**Edinburgh.**—ROADS.—Repairs on causeway and foot-pavements, also granolithic paving, and supply of road materials to the T.C., for six months. City Road Surveyor, Edinburgh.

MARCH 31.—**Kirkburton.**—ROADS.—Laying of 12 in. by 8 in. kerbs and channelling on the Halifax and Sheffield main road, for the U.D.C. Mr. Fred. Hobson, Council Office, Kirkburton.

MARCH 31.—**Swindon.**—WELL.—For sinking shaft and driving adits at Ogbourne Waterworks, for the T.C. Mr. S. C. Begnott, Borough Engineer, Swindon.

APRIL 3.—**Caerphilly.**—ROAD SURFACING.—For surfacing, asphalte-paved surface, certain roads within the area, upon prepared foundation, for the Caerphilly U.D.C. Approximate area 39,000 sq. yds. Mr. T. H. Richards, Surveyor, Council Offices, Caerphilly.

APRIL 3.—**St. Columb.**—SEWER.—Laying new sewer and constructing outfall works at Indian Queens and St. Columb-road, for the R.D.C. Messrs. Andrew & Randell, New Inn Chambers, St. Austell.

APRIL 3.—**Thornton.**—SEWERS.—Extension of main sewers in Rossall-road, Lawson's-road, and Woodland-avenue, for the U.D.C. Mr. Henry Fenton, Surveyor, Council Offices, Thornton-le-Fylde. Deposit £1 1s.

APRIL 4.—**Lanchester.**—SEWER.—Construction of about 735 lineal yards of 9 in. pipe sewer, &c., for the R.D.C. Mr. G. W. Westgarth, Surveyor, Lanchester.

APRIL 4.—**Stretford.**—ROADS.—For sewering, paving in rock asphalte, &c., of various streets and passages, for the U.D.C. Mr. Ernest Worrall, Surveyor, Council Offices, Old Trafford. Deposit £2 2s.

APRIL 4.—**Whitchurch (Glam.).**—STREET IMPROVEMENTS.—For street improvement works in Heol-y-forlau, Whitchurch, for the Cardiff R.D.C. Mr. William Farrow, Park House, 20, Park-place, Cardiff.

APRIL 5.—**Brookwood.**—CEMETERY.—For various works at American Military Cemetery, Brookwood, Surrey, for the United States Government. Const. Q.M., U.S.A., 6, Avenue d'Iena, Paris.

APRIL 5.—**Gilfach Goch.**—CONSTRUCTION OF SEWERS.—For the following works for the Llantrisant and Llantwit Fardre R.D.C.:—(a) Two lengths of sewer to connect the existing outfall sewers near Gorden Village, Gilfach Goch. (b) Ogmore and Garw U.D.C. trunk sewer, comprising the provision and laying of about 120 yds. of 12 in. dia. stoneware pipes and 90 yds. 9 in. dia. cast-iron pipes, with the construction of the invert of a culvert, storm water overflows, manholes, &c.; (b) extension of Hendreforgan, being the provision and laying of 160 yds. of 9 in. dia. stoneware pipes and 80 yds. 9 in. dia. cast-iron pipes, with construction of manholes, &c. Mr. Thomas Saunders, Surveyor, Council Offices, Pontyclun. Deposit £2.

APRIL 7.—**New Mill.**—CULVERT.—Repair of Fox House Culvert, on the Holmfirth District main road, within the Urban District of New Mill. West Riding Surveyor, County Hall, Wakefield. Deposit £1.

APRIL 9.—**Barnes.**—ROADS.—Widening part of Upper Richmond-road, Mortlake, for the U.D.C. Surveyor, Council House, Mortlake.

✱ APRIL 9.—**Bromley.**—SEWERING, LEVELLING, CHANNELLING, &C.—Sewering, levelling, paving, metalling, channelling and making good Haywood-road, for the Borough Council. Borough Engineer, Municipal Offices, Bromley, Kent. Deposit 10s.

APRIL 9.—**Camberwell.**—ROADS.—For making up Sunray-avenue, Herne Hill, for the B.C. Mr. Frederick J. Slater, Borough Engineer, Camberwell, S.E.

APRIL 9.—**London.**—ROAD WORK.—For the road work and plate-laying for the construction for the over head system of traction of tramway in Amhurst-park, from Seven Sisters-road to Stamford Hill, and for the reconstruction and widening of the bridge carrying Seven Sisters-road over the New River, for the L.C.C. Chief Engineer, Old County Hall, Spring-gardens, S.W.1. Deposit £5.

APRIL 9.—**Ogmore Vale.**—TANK CONSTRUCTION AND PIPE LAYING.—For construction of intake tank and fencing, and providing and laying about 50 yds. of 6 in. dia., 50 yds. of 4 in. dia. stoneware piping, and 423 yds. 4 in. dia. cast-iron piping, with all necessary valves and fittings, at Fronwen Source, Ogmore Vale, for the Mid-Glamorgan Water Board. Mr. Eiryn W. Davies, Superintendent and Manager, Water Board Offices, Bridgend.

APRIL 9.—**Steyning East.**—SEWERS.—Construction of about 4,500 yards of 9 in. and 6 in. subsidiary sewers, &c., for the R.D.C. Mr. Geo. W. Warr, Town Hall, Southwick. Deposit £3 3s.

APRIL 11.—**Middlesbrough.**—SEWERS, &C.—Construction of 4 ft. diameter cast iron pipe sewer and outfall, for the T.C. Mr. S. E. Burgess, Borough Engineer, Municipal Buildings, Middlesbrough.

NO DATE.—**Hamilton.**—SEWER.—Construction of an intercepting sewer, about 1,850 yds. in length, for the T.C. Mr. W. H. Purdie, Burgh Surveyor, Hamilton.

NO DATE.—**Sheffield.**—ROAD.—Construction of about 600 yards of road at Doer, near Sheffield. Messrs. Mitchell-Withers & Winder, Corn Exchange Chambers, Sheffield. Deposit £1 1s.

NO DATE.—**South Elmsall, near Pontefract.**—DRAINAGE, ROADS, BUILDING, &C.—Frickley Miners' Welfare Scheme:—(1) Drainage of 9 acres of land; (2) stubbing of fences; (3) supply of iron fencing to enclose the whole area and special fencing to surround four tennis courts; (4) laying of two bowling greens; (5) laying of four hard tennis courts; (6) erection of bandstand, shelters, pavilion, latrines, footbridge, swings, &c.; (7) laying of macadamed footpath. Mr. F. K. Robinson, Frickley Colliery, South Elmsall, near Pontefract.

Competitions.

(See Competition News, page 474.)

Auction Sales, Tenders, etc.

MARCH 27.—**Surrey.**—Messrs. J. T. Skelding & Co. will sell, on land at junction of Boundary and Brambledown-roads, Wallington, Surrey, the capital surplus timber, plant and building materials, including portable railway track, hut sections, &c. Auctioneers, 45, Gresham-street, Guildhall, E.C.2.

MARCH 28.—**Beddington, Surrey.**—Messrs. F. H. & C. E. Clark will sell, at Beddington House, Beddington, near Croydon, timber and building materials (without reserve), and other miscellaneous effects. Auctioneers, Beddington House, Beddington, Surrey.

MARCH 28.—**Frampton-on-Severn, Glos.**—Messrs. Bruton, Knowles & Co. will sell by auction, by direction of the Disposal Board, wood, iron, and concrete buildings, and building materials, &c. Auctioneers, Albion Chambers, Gloucester.

APRIL 19.—**London, N.W.**—Messrs. Knight, Frank & Rutley, in conjunction with Messrs. C. Rawley Cross & Co., Ltd., will sell, in the Hanover-square Estate Room, a modern, non-basement country style residence, known as Rosedene, Christchurch-avenue, Brondesbury Park, N.W. Auctioneers, C. Rawley Cross & Co., Ltd., 21, Bedford-row, W.C.1; Knight, Frank & Rutley, 20, Hanover-square, W.1.

MAY 3.—**London, W.**—Messrs. Knight, Frank & Rutley will sell, in the Hanover Estate Room, by direction of the Council of His Royal Highness the Prince of Wales, K.G., an important corner building site situated between Waterloo Bridge and Waterloo Station, and facing H.M. Stationery Office; also block of shops and business premises. Auctioneers, 20, Hanover-square, W.1.

Public Appointments.

MARCH 26.—**London, E.C.**—Architectural and Surveyor's Draughtsman on the temporary staff of the Engineer-in-Chief's Department, between 18 and 25 years, third-class draughtsman. Mr. G. A. Powell, Clerk to the Board, Office of the Board, Victoria Embankment, London, E.C.1.

✱ APRIL 4.—**Southport.**—Temporary Architectural Assistant in the Borough Engineer's Department by the County Borough Council; endorsed "Temporary Architectural Assistant." Mr. A. E. Jackson, Borough Engineer, Town Hall, Southport.

NO DATE.—**Merthyr Tydfil.**—The B.C. is to appoint Temporary Assistant Engineer at salary of £400 per annum. Mr. T. Aulwyn Rees, Town Clerk, Merthyr Tydfil.

✱ NO DATE.—**Rawtenstall.**—Whole-time Architect required by the Guardians of the Haslingden Union, at their Institutions, Rawtenstall, Lancashire. Mr. A. N. Rothwell, Clerk to the Guardians, Union Offices, Rawtenstall.

HOUSING SUBSIDY.

A deputation from the Associations of Municipal Corporations was received by Mr. Neville Chamberlain, Minister of Health, on Thursday last week, with reference to the financial assistance to be given by the Government to the local authorities for the provision of new working-class houses. The Minister agreed to offer a subsidy of £6 per house per annum for twenty years, to be available for a non-parlour house of five rooms. This figure was accepted by the representatives as one which would enable the building of houses to be pressed forward with the utmost vigour. The subsidy, it is understood, will be available for the encouragement by the local authorities of building by private enterprise, and those present unanimously agreed that measures to this end would have a prominent place in their programme.

Sir A. Mond, in a statement to the *Times*, says:—"I cannot quite follow why the Minister has agreed to a figure of £6 per house, especially when, as I understand, the Leeds Corporation are prepared to accept £4. The figure now proposed is higher than seemed to be required when I was studying the question. I have no doubt we shall hear an explanation of this when the Bill is introduced. It is also not clear from the official statement in what way the scheme is to be limited. I envisaged a relatively limited number of houses in a limited period, and I gather that Mr. Neville Chamberlain has something of the kind in his mind. . . . It is obvious that variations in the amount of grant will have to be made in different localities.

"I am not able to follow to what extent, or how, it is proposed to introduce the private builder into the scheme. Our previous experience of subsidising private builders proved very difficult in financial control and in getting houses built for the people for whom they were intended, and I hope, if it is proposed to subsidise the private builder under this scheme, that very careful consideration will be given to the experience of the last private builders' subsidy and to the safeguards that are necessary to prevent abuses."

PROPOSED NEW BUILDINGS & OTHER WORKS.*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ARDWICK.—At the last meeting of the U.D.C. the surveyor intimated that the Bentley Colliery Co. proposes to erect 450 houses at Scewthorpe.

BANBURY.—The T.C. has decided to erect 40 houses.

BARNSLEY.—Plans have been approved for the erection of three houses, Woodstock-road, Barnsley, for Mr. W. Storrs, the architect.

BARRY.—The U.D.C. has decided to carry out the scheme for accident hospital extension at estimated cost of £1,400.

BEDFORD.—Plans passed by T.C.: Mr. E. H. C. Inskip, for Ammonia Fertiliser Co., extension, Duck Mill-lane; Messrs. Astell Bros., conversion, of cottage, Bedesman's-lane; Mr. E. H. C. Inskip, for Mr. H. Humphreys, garages, 23, St. Mary's-street.

BEDWELLTY.—Deputations urging grant toward immediate executions of following schemes have been sent by U.D.C. to Government Departments concerned: Manmoel Water Scheme; construction of Pengam-Blackwood-road; road widening at Beaufort; proposed diversion of road at Bedwellty and road works at Markham and New Tredegar; a scheme for road construction at Pwlfiglas to Pengam is being considered. The U.D.C. has decided to construct fire station at Blackwood and equip with motor fire engine to serve Sirhowy and Cefn districts.

BLACKPOOL.—Plans passed by Building Committee: T. Bowker, six houses, Rothsay-road; Messrs. Chadwick & Howarth, two houses, Second-avenue; T. & J. Pye, seven houses, Rose-avenue; L. & T. Rushton, three houses, Broughton-avenue; W. Taylor, bungalow, Bankfield-grove; L. Barker, three houses, Pine-grove; G. Hodgson, four houses, Cleator-avenue; Messrs. Cardwell & Blackburn, two houses, Pine-grove; Suthers, Wilson & Randall, bungalow, Windsor-avenue, Cleveleys; W. Hutton, house, Frederick-street; S. Stansfield, two houses, Durley-road; W. Lancaster, two houses, Bamber-avenue; H. H. Johnson, four houses, Rangeway; G. Wade, four houses, Kensington-road; J. Stanworth, bungalow, Hawes Side-lane; W. Haslam, two houses and shops, Red Bank-road; J. E. Wright, four houses, off Waterloo-road; J. T. Hill, bungalow, Berwick-road; H. H. Johnson, four houses, Stamford-street; H. Lowcock, bungalow, St. Stephen's-avenue; Harrison & Pilkington, 18 houses, Silverwood-avenue; Miss L. Roberts, two houses, Lonsdale-road; J. Marsh, 78 houses, off Watson's-road; James Gregson, four houses, Central-road; James Hayes, house, Hornby-road; T. Mason, two houses, Palatine-road; Mrs. E. Whittaker, bungalow, Arnold-avenue; Messrs. Hargreaves & Emery, two bungalows, Berwick-road; J. Gregson, three houses and shop, Bloomfield-road; J. Harrison, five houses and shops, St. Anne's-road; W. Flint, seven houses, Leamington-road; J. Parkinson & Sons, four houses, Leicester-road; W. Cardwell Bros., nine houses, Anglers'-hill-road; V. & L. Newsome, 12 houses, Keswick-road; J. Benson, two houses, Burlington-road; J. & W. Ormerod, two houses, Chislehurst-avenue; W. Clark, two houses, Worsley-avenue; Messrs. Abson Bros., two houses, Worsley-avenue; J. W. Selby, two houses, Alexandra-road, Bispham; G. Morris, 11 houses, Gloucester-avenue and Ripon-road; J. Wolstenholme, two houses, Fir-grove.

BLACKWELL.—The Church Council have decided upon a scheme which will add about 110 seats to the present accommodation, and provide vestry and accommodation for the choir and clergy.

BROMLEY.—Plans passed by T.C.: Mr. F. Carter, 12 shops, High-street; Messrs. G. W. Smith & Sons, conversion of 3, Market-square, into two shops; Messrs. Archer & White, two houses, Madeira-avenue; Mr. F. G. Crickett, additions, 4, Holwood-road; Mr. H. R. Latter, bathroom, 5, Meadow-road; Mr. S. B. Caulfield, additions, Park-riding, Bird-in-Hand-lane; Messrs. H. E. Kemp & Co., four houses, Bromley Common; Messrs. Keen & Co., bungalow, Burford-road; Mr. C. Tyler, garage, with living rooms over, Mossiea-road; Messrs. Wills & Kaula, addition, 14, Wendover-road; Mr. F. G. Crickett, additions, Baptist Church, Cherry Orchard-road.

BURNLEY.—Plans passed: Shop front, 350, Colne-road, Messrs. H. & R. Clegg; chimney, Brickworks, Blannel-street, Messrs. J. Duckett & Son, Ltd.; garage, Montrose-street, Mr. Wm. Ward.

BURRY PORT.—The Ashburnham Golf Club has notified the U.D.C. that the members propose to spend £3,000 on the erection of a club-house and consequently cannot lease land to the Council.

CAERPHILLY.—A new engine-erecting shop, with most modern equipment, is to be erected at Caerphilly by the G.W.R. Co., on the Rhymney section, at estimated cost of £160,000.

CANNOCK.—Plans passed by R.D.C.: Conversion of a building at Churchbridge into four cottages for Mr. Perks, and others a house and bungalow at Great Wyrley and a bungalow at Cheslyn Hay.

CONWAY.—Plans passed by T.C.: Bungalow, Sychnant-road, for Mr. R. H. Mellor; house, Cadnant Park, for Mr. J. W. Post; house, Rosehill-street, for Dr. M. J. Morgan; two semi-detached villas, Sychnant-road, for Mr. T. A. Leonard; scout hall, Mount Pleasant, for the Conway Boy Scouts Association.

CWMDARE.—A public hall is to be built, at proposed cost of £5,000, at Cwmdare, by public subscription. Sir David Llewelyn and family have subscribed £2,000 toward cost upon conditions. The secretary of scheme is Mr. W. M. Llewelyn.

DARTON.—Plans passed by the U.D.C.: House and shop in Huddersfield-road, for Mr. J. R. Bunniss; house and shop in Church-street, Darton, for Mr. and Mrs. McHale; house and shop in the same street, for Mr. J. F. C. Allen.

DICKLEBURGH.—A faculty has been granted for the restoration of the tower of the parish church.

DONCASTER.—At the Brewster Sessions plans were passed for the rebuilding of the "Angel and Royal Hotel," for Messrs. Pilkington; the rebuilding of the "Princess Victoria," High-street; and the rebuilding of St. James's Tavern, in St. Sepulchregate, and the "Spread Eagle," in West Laithgate.

DOVER.—Plans passed by T.C.: Fry & Miller, house, Crabble-hill, for Mr. W. R. Williamson; Mr. C. E. Beaufoy, garage and showrooms, Cherry-tree-avenue, for the Connaught Coach Works and Palmer's, Ltd.; Mr. S. N. Hillman, two cottages, at Old Park-road, for Mr. E. Bristow.

EAST HAM.—Plans passed by B.C.:—Two houses, 54 and 56, Cromwell-road, for C. W. Saxton; 73 dwelling-houses, Wall End-road, Bedford-road and Kempton-road, for H. White; alterations of shop, 8, High-street North, for the Maypole Dairy Co.; two houses, 85 and 87, Frinton-road, for F. Scrivener; houses, Langdon-road, for W. J. Kemp; 40 dwelling-houses, Caledon-road, for W. Robinson.

EDINBURGH.—Warrants were granted to the trustees for the Hospice, Spring-gardens, to erect a maternity hospital facing the King's Park. The hospital will form the Dr. Elsie Inglis War Memorial, and will cost about £30,000. Warrants were also granted to erect a laboratory and X-ray block at Smithfield, Liberton, for research work to the Royal Victoria Hospital for Tuberculosis; cottage at Rouil-road, Corstorphine, to Mr. James Anderson; dwelling-house at Morningside-grove, to Mrs. Jane Blyth; alterations to premises at Lochin-place, to Edinburgh Cold Storage Co. Warrants were granted in the cases of Mr. Patrick Loftus, Cameron-terrace, to erect two semi-detached villas, and Miss Riach, 1, Viewforth-terrace, to erect garage and offices; J. W. Mackie & Sons, 107, Princes-street, for extensive alterations on existing premises; Mr. Alexander Morrison, block of two flats at St. Ninian's-road.

ETON.—Plans passed by R.D.C.: Three shops in Packhorse-road, Gerrards Cross, for Mr. D. Ryder; dwelling-house in Eton-road, Datchet, for Mr. C. W. Lander; addition to The Priory, Taplow, for Mr. P. Noble; house in Lent Rise, Burnham, for Mr. F. Harding; additions to The Cabin, Langley, for Mr. R. Herbert; garage at Meadow Lea, Datchet, for Mr. A. Bidwell; house at Denham, for Mr. W. Wise; bungalow on Taplow Station Estate, for Mr. Clinkaberry; cottage in Bath-road, Burnham, for Mr. W. Collyer; house at Hitcham, for Mr. W. Dunsdon; house at Denham, for Mr. H. Guy Fiske; house and shop at Farnham Royal, for Mr. W. Dell; house at Taplow, for the Halden Estates, Ltd.; house and shop at Bellshill, Stoke Poges, for Mr. B. Burgess; bungalow at Gerrards Cross, for Miss E. M. Du Pre; alterations and additions and new dairy to The Haven, Wexham-street, for Mr. T. Larking; alterations and additions to The Grange, Templewood-lane, Farnham Common, for Mr. B. B. Van Pragh; house at Hedgerley, for Mr. R. C. Lee; bungalow at Wraysbury, for Mr. A. F. Kidd; bungalow at Larborne Farm, Iver, for Mr. W. Smelt; and bungalow at Wraysbury, for Dr. J. Strickland Goodall.

FALKIRK.—At the Dean of Guild Court an application was submitted by trustees of Camelon Parish Church for warrant to enlarge and reconstruct the church in Glasgow-road, Camelon, at an estimated cost of £3,700. The plans were passed and warrant granted. Mr. John B. Harrison, Thistle-street, Camelon, was granted lining to erect a bungalow at High Station-road, Falkirk, the estimated cost being £1,000. Sanction was also given to the Falkirk Iron Co., Ltd., to erect, at an estimated cost of £500, a laboratory and photographic studio at their works.

GILLINGHAM.—Plans passed by T.C.: Bungalow, Carlton-avenue, for G. H. Ward & Co.; house, Barnsole-road, for Mr. J. W. Legg; house and garage, corner of Rock-avenue and St John's-road, for Mr. F. J. Wickham; alterations at 64, Balmoral-road, for the Sheerness Building Society.

GLASGOW.—The Dean of Guild Court at his last sitting passed plans for work valued at about £50,000. Glasgow Corporation were given sanction to proceed with extensions to the cattle sheds at Merklands Wharf, valued at £6,500; extension of Elder Library, Govan, at cost of £8,160; erection of shops at the junction of Old and New Cumbernauld-roads, in connection with the Riddrie Housing Scheme, £4,000; new bowling and tennis pavilion at Bellahouston Park, £1,200, and new curator's house and bowling pavilion at Glenconner Park, £700.

GRAYS.—At the last meeting of the U.D.C. the Surveyor presented the plans for the proposed new infant welfare centre, the estimated cost of which was £2,500. It was decided that the building should be erected by direct labour, and the Clerk, Mr. C. Aspin, was instructed to apply for a loan of £2,500 for the work.

HARROGATE.—The T.C. has decided to apply to the Ministry of Health for sanction to borrow £21,000, for a central depot.

HASTINGS.—Plans passed: Additions, 3, Berlin-road, Mr. C. Ayling, architect; alterations, 28, George-street, Mr. H. F. Cordwell, per Mr. J. Hunt, architect; bungalow, Albany-road, Mr. C. J. Hughes, per Callow & Callow, architects; additional room at "Allegria," Quarry-hill, for Major Huth, per Mr. P. H. Oxley, architect; villa and garage, St. Saviour's-road, Mr. G. Hollands, per Mr. J. H. Hobbs, architect; two cottages, Beaconsfield-road, Mr. S. Dunk, per Mr. H. W. Coussens, architect; alterations, &c., 62 and 64, Bohemia-road, Mr. W. J. Cosens, per Mr. H. W. Coussens, architect; conversion of coach-house into two lock-up shops, West-hill, Mr. H. Broadhurst, per Mr. P. H. Oxley, architect; additional story, Parade Cottage, Beach-terrace, Mr. P. F. Meyers, per Mr. H. W. Coussens, architect; alterations, 43, George-street, Mr. H. B. Wright, per Mr. H. W. Coussens, architect; conversion into three flats and two lock-up shops, 40, Marina, Mr. E. Eyles, per Mr. P. H. Oxley, architect; house, Alfred-road, Mr. F. J. Holdoway, per Mr. J. Hunt, architect; bungalow, Vale-road, Mr. H. Povey, per Mr. J. H. Hobbs, architect; conversion into flats of Starborough House, Church-road, Mr. Thorogood, per Mr. H. M. Jeffrey, architect.

HAZEL GROVE.—Plans passed by U.D.C.: Five houses in Moss-lane, for Mr. Snow; house, Hatherlow-lane, for Mr. J. Wild; bungalow, Bridge-lane, for Mr. Percival; two houses, Chester-road, for Mr. A. Fidler; wooden bungalow, off Tenement-lane, for Mr. J. T. Harrison; bungalow in Manor-road, for Mr. E. M. Oldham; house, in Highfield-road, Torkington, for Mr. E. Officer; new road, Eaton-park Estate, Moss-lane, for Mr. W. H. Snow.

HETTON.—Plans passed by U.D.C.: Shop, weigh-house, &c., in Station-road, for Messrs. Brough, Ltd.; house, in Station-road, for Mr. J. J. Storey; alterations to Primitive Methodist Chapel, Easington-lane.

HOLME CULTRAM.—Plan passed by U.D.C.: Factory, Esk-street, Silloth, for Mr. W. English.

KESWICK.—The U.D.C. has approved plans by the Surveyor for lavatories.

KIDWELLY.—The local Council and ratepayers' meetings are considering purchase of Rumsey House from Mr. Harold Greenwood for £1,800. It is proposed to alter building to local hospital as war memorial and £500 to £1,000 is expected from the Miners' Welfare Fund.

KILMARNOCK.—The T.C. has agreed to proceed with a new scheme of housing on a site at Scott-road, and the Scottish Board of Health has approved of plans, with tenders amounting to £14,209 14s., for the erection of 30 houses.

KIRKCALDY.—Messrs. Michael Nairn & Co., Ltd., are about to carry out a scheme of additions to their works at North Factory, and this, it is understood, will embrace the erection of a warehouse of considerable dimensions.

LEEDS.—At the adjourned Licensing Sessions, the Bench granted the application of Messrs. Peter Walker & Sons, for alterations at the Highland Inn, Cavendish-street, and those of the Leeds and Wakefield Breweries, for alterations and extensions, at the "General Peel," Beckett-street; the "General Washington," Caroline-street; the "Providence Inn," Great Garden-street; and the "Morning Star," Kirkstall-road.

LINCOLN.—A private housing scheme is being launched at Lincoln, and for the purpose the western portion of the aerodrome at Bracebridge Heath, with its buildings, roads, and sewers, has been acquired. The City Council has decided to apply for powers to demolish 130 slum dwellings, and to build as many new houses on the Council's site, each house to contain bath, three bedrooms, parlour, &c., and a garden. It is hoped to make the rents 8s. 6d. a week. The scheme is estimated to cost £60,000.

LLANELLY.—The B.C., after review of estimates and plans, has decided to borrow £5,000 for extending and furnishing local Isolation Hospital; the plans of new underground convenience to cost £1,000, estimate, have been approved by B.C.

LLANTRISANT.—A deputation is to wait on the Ministry of Transport from the R.D.C. to urge the need of putting into immediate operation a scheme for road reconstruction and widening at Tonrefail.

LONDON (BRIXTON).—The Justices have passed plans for the rebuilding of the premises of Messrs. Quin & Axtens, 418, Brixton-road.

LONDON (HACKNEY).—Plans passed by B.C.: Warehouse, by Robt. Young Construction Co., for the Hackney Furnishing Co., at Reading-lane; addition to factory, 172 and 174, High-street, Homerton, for M. M. Shire; additions to Elephant public house, Kingsland High-street, for E. A. Roome & Co.

LONDON (LEWISHAM).—Plans passed by B.C.: Four houses, Bourneville-road, for E. A. Stone; five houses, Kilmorie-road, for H. R. Watt; 10 houses, Hither Green-lane, for A. G. Hastilow; two houses, Guibal-road, for T. Collins; drainage, 97 to 103, Gilmore-road, for H. L. Fleming; eight houses, Mordenhill, for J. Watt.

LONDON (WANDSWORTH).—Plans passed by B.C.: Messrs. John Wilmott & Sons, six houses with shops, Upper Tooting-road; Mr. J. T. Dare, re-drainage, The Keeper's Cottage, Stag-lane, Kingston-road, Putney; Mr. G. Hill, two houses, corner of Streatham Common, North, and Hill House-road; Mr. A. Dean, house and workshop, Longmead-road, Tooting; Messrs. F. T. Wooding & Sons, three houses and two garages, Abbotsleigh-road, Streatham; Mr. H. Oliver, garage, 425, Garratt-lane, Springfield; Messrs. Castle & Sons, house, workshop and store sheds, Gartmoor-gardens, Southfield; Messrs. Bell, Gripper & Wilkins, four houses, Glenburnie-road, Balham; Mr. S. T. Hennell, garage, "Wharncliffe," Putney Heath-lane; Mr. A. A. Chandler, house, Hilldown-road, Streatham.

MAIDENHEAD.—Plans passed by T.C.: Pavilion, York-road, for the Desborough Bowling Club; house, Rutland-road, for Miss D. Savage; alterations and additions to premises, St. Mark's-road, for Mr. J. P. Brill; bungalow, Bray-road, for Mr. E. Dunkels; garage, "Moorcroft," Ray Park-avenue, for Mr. W. J. Fryer.—The G.W.R. Co. propose to expend £16,000 on the improvement of the railway station.

PWLLHELI.—Improvements are to be made to the station at an estimated cost of between £6,000 and £7,000.

MANCHESTER.—The Ministry of Health has sanctioned the borrowing of money for the provision of three more public washhouses in Manchester. They will be situated in Mayfield, Ardwick, and Moss Side.

* See also our List of Contracts, Competitions, etc.

MERTHYR.—It is proposed to convert the Bush Hotel into premises for Messrs. Woolworth.

NEATH.—The R.D.C. has urged G.W.R. to commence at early date upon construction of mineral railway extension decided upon to run from Clyne to Glyn-Neath. The G.W.R. Co. has been requested by R.D.C. to widen Resolven bridge. Messrs. Cory Bros. have been called upon to immediately arrange for road repairs and sewers at Cory-street, John-street, and Company-street, Resolven, by the R.D.C. Failing agreement the Council will take steps to complete work and charge to the company.

NESTON.—Plans passed by U.D.C.: Bungalows, Burton-road, for Miss Boggs; house, Leighton Park Estate, for Messrs. Griffiths, Sons & Cromwell.

NEW ROMNEY.—Cottage, Madeira-road, Littlestone, for Mrs. Smitten.

NEWPORT.—The T.C. has approved the Works Committee's estimates which provide for the erection of new shelter in Coronation Park, construction of open-air swimming bath, a new pavilion and convenience in Crindau Park, and a number of tennis-courts near Shaftesbury Park. The Council has sanctioned provision of £1,000 extra to road expenses for provision of a better surface material. The Council has applied for loan of £150,000 for electricity department, plant, equipment and utensils, purchase, &c. The Electricity Committee has decided to erect three pairs of semi-detached houses, at estimated cost of £300 each, for employees, and Council has approved. The T.C. has decided to erect a new cattle market and also new slaughterhouses on the east side of the River Usk. The British Mannesman Tube Co. have urged the Newport Council to construct sewers in their works vicinity to permit extensions by the company. The T.C. has made provision in estimates for construction of new roadway along Ebenezer-terrace, extension of the bridge carrying roadway over G.W.R. and canal at Mill-street, the Corporation's share of bridge alterations at Shaftesbury-street, and for acquisition of properties to enable new street to be built connecting Newport Bridge with Shaftesbury-street.

PENARTH.—Plans passed by U.D.C.: New garage at Hill Side, Beach-road, for Mr. T. C. Kirk; building at 2, Comerswell-road, for Mr. C. G. Bingham; house for Messrs. Thome & Sons, Wordsworth-avenue; garage at 19, Victoria-road, for Mr. C. T. John; premises, 7, Hill View-terrace, Mr. S. A. Naish; Messrs. W. E. Davies, 18, Windsor-terrace, applied for site on which to build four houses. The Council has decided to serve statutory notice for repairs necessary to 55 houses in the area.

PONTYPRIDD.—The U.D.C. is to undertake extension of mains to Rhydfelin to supply district with electricity and for street lighting purposes. The G.W.R. Colliery Co. is undertaking large scale sinking operations at Hopkinstown, Pontypridd. Plans have now been passed by U.D.C. for Labour Hall at Treforest. The Miners' Welfare Fund, by advice of local agent, is to finance erection of public Institute at Graig, including lecture, committee, billiard and reading rooms, &c., and lay-out children's playground on Maritime Field. Mr. J. H. Davies, Pontypridd, is the architect.

PORT TALBOT.—The Explosives & Chemicals Products Co., Ltd., Finsbury-pavement House, London, has presented plans to the T.C. for erection of a magazine for explosives at Cwmavon, Port Talbot.

PORTHCAWL.—The Electricity Commissioners have sanctioned the application of the U.D.C. for a special order for the lighting of the area. The Council has instructed Mr. Midgeley Taylor, London, to prepare plans for a drainage scheme for the eastern section of the area.

RHYMNEY.—A new engine-erecting shop, capable of dealing with the most modern engines working in the district, is to be constructed at Caerphilly, on the Rhymney section of the G.W.R., at an estimated cost of £160,000, the existing depot being converted into a boiler shop.—The U.D.C. has decided to apply for sanction to repair 50 Dorlonco houses erected under assisted scheme. The dilapidations were stated by surveyor to be in no way attributable to contractor work.—The Ministry of Health has sanctioned the erection of ten houses at £338 per house, subject to certain conditions by the U.D.C.

ROTHWELL.—Plans passed by U.D.C.: Blacksmith's shop at Lee Moor, for Mr. A. Goodison; motor shed, &c., for Mr. W. Wilson; Co-operative Stores at Haigh-road.

SAFFRON WALDEN.—Plans passed by T.C.: Lock-up shop, Victoria-avenue for Mr. H. Pountney; bungalow, Debden-road, for Mr. A. Titmarsh.

SHEFFIELD.—It is proposed to erect 150 additional houses on the Manor estate of the Corporation at an approximate cost of £55,000. They are to be of the C, B, and E types, at estimated costs of £263, £336, and £388 respectively. This is an average estimated cost of £314 each, exclusive of land and street works.

SINGAPORE.—Messrs. Perry & Co. (Bow), Ltd., 56, Victoria-street, S.W.1, have secured the contract for the sailor's home to be erected at Singapore. The home will be erected near the docks, and will provide accommodation for officers and men, and also for a Nautical School, recreation and billiard rooms. The cost is estimated at £50,000.

STOCKPORT.—The plan of a new street off Cheadle Old-road, to be called Cashmere-road, has been submitted by Mr. Thomas Davies, and approved; also plans of a sprinkler tower and staircase for Carrington Mill, Newbridge-lane; and transformer house for Messrs. Lees' Hat Works, Hillgate.

STOKE-ON-TRENT.—Mr. C. H. Roberts, an inspector of the Ministry of Health, has held an inquiry into an application by the Corporation to borrow £5,614 for improvements and extensions to the Hanley Sewage Works.

TREBOETH.—The Treboeth and District War Memorial Committee has decided to spend from £400 to £500 on an 8 ft. high cenotaph in front of the public hall.

TREDEGAR.—The Tredegar Group of Council Schools' managers have decided to extend Dukestown School to provide accommodation for 200 children. A site is asked from U.D.C. at Ashville.

WALLASEY.—Plans passed by T.C.:—Conversion of stables into lock-up shop, Nelson Hotel, Stringhey-road, for Peter Walker & Son (Warrington and Burton), Ltd.; shed, garages, &c., Riverview-road, for Messrs. S. M. & J. T. Amies; two houses, Lymington-road, for Mr. W. J. B. Bellis; alterations and additions, "Rostherne," Warren-drive, for Mr. A. B. Wallis; conversion of 100, Manor-road, into house and shop, for Mr. D. Broster; conversion into two flats of 2, Sea-road, for Mrs. Elizabeth M. Nelson; house and shop at the Queen's Picturedrome, Poulton-road, for the Wirral Picturedromes, Ltd.; conversion into a shop and house of 114, Seaview-road, for Mr. C. Golding; two houses in Hamilton-road, for Messrs. Harrocks Bros.; house, corner of Hamilton-road and Bellfield-grove, for Messrs. Harrocks Bros.; three houses in Claremount-road and Ripon-road, for Mr. G. A. Lindley; store room, 70, Wallasey-road, for Mr. W. J. Monteith; two shop fronts, 10 and 12, Liscard Village, for Mr. J. Marriott; dwelling house and garage, St. Hilary-drive, for T. Owen; eight houses, Radley-road, for Mr. J. H. Lindley; addition to "The Bungalow," Wallasey-road, for Mr. W. Lloyd Jones; conversion of 221, Seaview-road, into two houses and two shops, for Messrs. Barber & Co.; two houses, Groveland-avenue, for Mr. F. J. Broadbent; alterations and additions, 103 and 105, Victoria-road, for the Birkenhead and District Co-operative Society, Ltd.; shop and house, Mill-lane, for Messrs. E. & A. Bellis; house and shop and lock-up shop at the corner of Wallasey Village and Green-lane, for Mr. J. Morris; three houses in Cliff-road and Station-road, for Mr. A. Evans; house, St. George's-park, for Mr. F. O'Neill; house at the corner of Palmerston-road and Dawlish-road, for Mr. W. Leyland; four flats at the corner of Hamilton-road and Mount-road, for Messrs. Harrocks Bros.; vestries at St. James' Church, Albion-street, for the Vicar and Wardens of St. James' Church; alterations, 37 to 45, Victoria-road, for Mr. H. Kingham.

WIGTON.—Plans passed by R.D.C.: Cottage, Down Hall, for Mr. J. Clark; bakehouse, Allonby, for Mr. W. Stordy.

WORCESTER.—A Ministry of Health enquiry has been held into an application by the City Council to borrow £20,000 for water supply purposes, including the construction of a subsiding tank in the neighbourhood of the waterworks by Severnside.

FIRES

BANBURY.—Messrs. Cheney's printing works, established a century ago, have been destroyed by a fire.

CARDIFF.—A fire has gutted the sweet factory of Messrs. Naish, confectioners.

DUNDEE.—The premises of J. P. Inglis & Sons have been damaged by fire.

GWAUN-CAE-GURWEN.—Damage to extent of £600 has been done by fire to building belonging to Mr. David Thomas, Gurwen Stores.

PERTH.—Damage estimated at several thousand pounds has been done through an outbreak of fire at the flax works of Mr. Peter Sharp, the Shore.

SALTBURN.—Damage to the extent of over £2,000 has been caused to a villa at Saltburn, belonging to Mrs. W. Janson.

TREDEGAR.—Damage to extent of £2,500 was caused by fire, which destroyed the garage of the Tredegar Charabanc Co., Church, of which Mr. Harry Stubbs is secretary.

LAW REPORT.

An action was heard before Sir Francis Newbolt, K.C., Official Referee at the Manchester Assize Court, on March 13. The plaintiffs, the Combined Concrete Construction Co., Ltd., of Manchester, sued Messrs. Hudson & Kearns, Ltd., printers, of London and Manchester, for the sum of £2,464, who disputed liability and counterclaimed for damages. On the opening of the court on the second day's hearing, it was announced by Mr. Cyril Atkinson, K.C., who appeared for the defendants, that the action had been settled. The terms of the settlement were that plaintiffs (the Combined Concrete Construction Co., Ltd.) submitted to judgment in favour of Messrs. Hudson & Kearns, Ltd., and also to judgment for that firm on counterclaim for sum of £5,000 to include costs, stay of execution and amount of damages being reduced to £2,250 if paid within times specified in the judgment.

Mr. Eastham, K.C., and Mr. Burgess appeared for the plaintiffs, instructed by Mr. W. E. Laycock, of 33, Princess-street, Manchester; Mr. Cyril Atkinson, K.C., Mr. Arnold Inman, and Mr. Lawrence Mead appeared for the defendants, instructed by Messrs. Charles Humphries & Co., 36, Basinghall-street, London.

Electrical Development Association.

The annual luncheon of the Electrical Development Association was held at the Hotel Cecil recently, the President, Mr. W. B. Woodhouse, being in the chair.

In proposing the toast of the electrical industry, Lord Haldane emphasised the dependence of the industry on research.

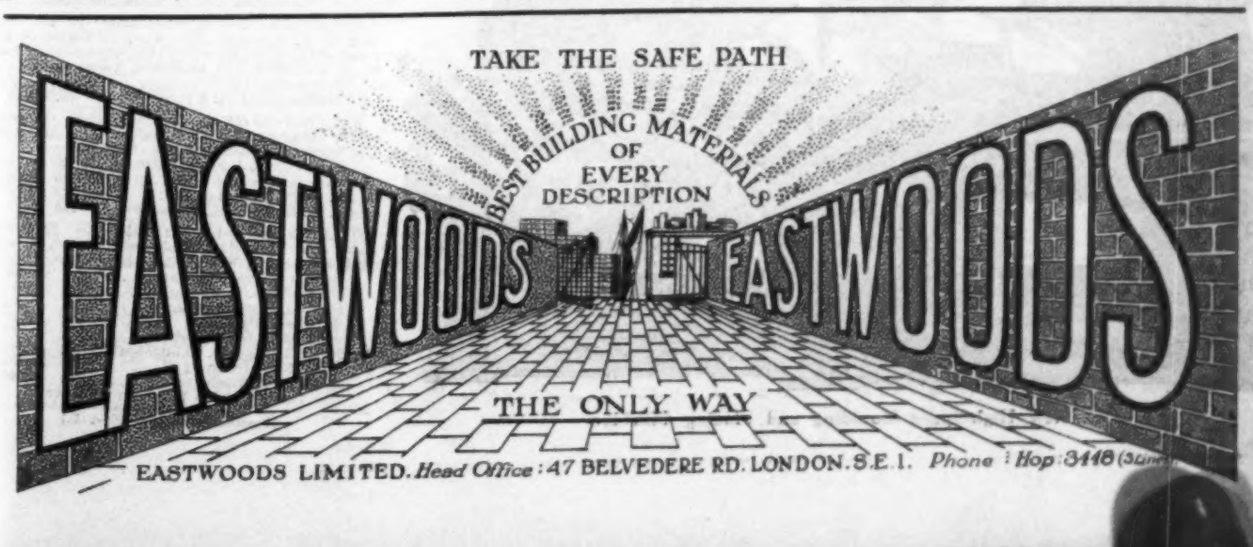
Mr. Woodhouse, in responding, commented on the fact that, in contrast with the depression prevailing in many industries, the electrical industry had been prospering. No doubt its recent rapid progress was accounted for by the circumstance that it afforded a means of economy, and economy was greatly needed at the present time. He dwelt on the necessity of co-operation between the manufacturing, supply, and contracting branches, and expressed the opinion that in the first instance a widespread and abundant supply of electricity was more important than a cheap supply.

Housing Progress in Scotland.

The following figures show the progress that has been made in State-aided housing schemes in Scotland to February 28, 1923:—

Permanent houses completed	15,351
Temporary ,, ,, ...	665
Reconstructed ,, ,, ...	101
Houses completed under the Private Subsidy Scheme	2,236
	18,353

There are 5,276 houses at present under construction in connection with housing schemes carried out by local authorities and public utility societies. The total amount paid by the Scottish Board of Health in respect of the 2,236 houses completed under the private subsidy schemes is £540,000.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EASTWOODS
BEST BUILDING MATERIALS OF EVERY DESCRIPTION
IN EASTWOODS
THE ONLY WAY
EASTWOODS LIMITED. Head Office: 47 BELVEDERE RD. LONDON. S.E.1. Phone: Hop 3448

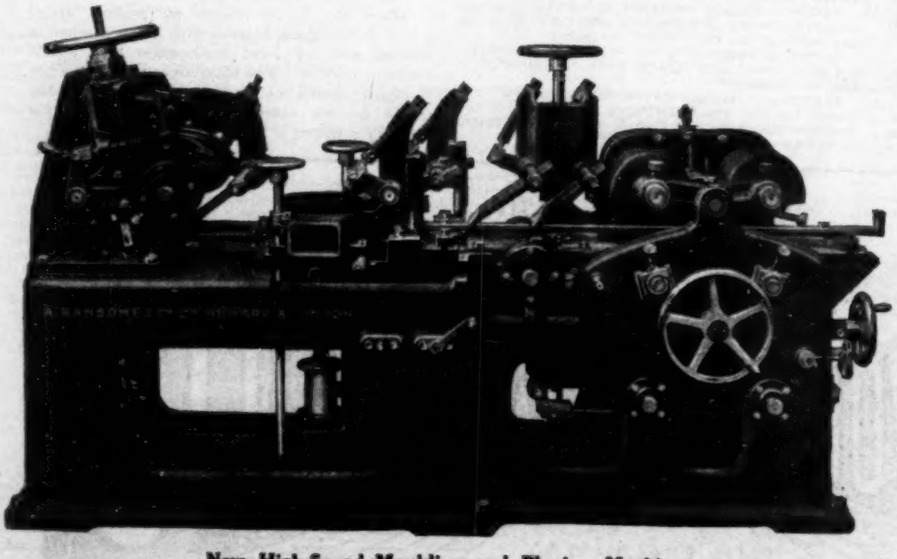
NEW WOODWORKING MACHINES.

At their works at Newark-on-Trent, Messrs. A. Ransome & Co., Ltd., on Monday gave demonstrations of two new woodworking machines, namely, a high-speed planing machine and a high-speed moulding machine.

The planing machine turned out floorings, planed, grooved, tongued, edged, and thicknessed at the rate of 270 ft. per minute. In designing this machine special care has been taken to make all the adjustable parts as convenient as possible, so that very little time is lost in setting the machine, and its productive power is thereby materially increased. Instantaneously-variable feed gear is provided which gives feeds from 32 ft. to 270 ft. per minute, according to the quality of the wood. The feed can be stopped, started or varied while the cutters are in motion. The cutter-blocks are all fitted with six thin knives of high-speed steel, and a special "jointing" apparatus is provided for use with each of the cutter-blocks, which obviates the necessity of any fixed plane irons.

Perhaps of more interest to builders is the moulding machine illustrated. This is of entirely new design, and specially arranged for planing on all four sides at one operation, and tonguing, grooving, edging and beading boards up to 7 in. wide by 3½ in. thick, and for producing single and double mouldings of any pattern in either hard or soft woods of excellent finish with an extremely rapid feed. An instantaneously variable feed gear is provided inside the main standard of the machine, enabling any rate of feed to be obtained from 20 ft. to 80 ft. per minute. The feed can be stopped, started or varied while the cutters are in motion. The feed consists of two pairs of rollers of large diameter; the first pair being fluted to give a grip on the timber, and the second pair plain. All four rollers are driven, thus ensuring the boards being fed continuously without any slip. Both the top feed rollers are raised or lowered simultaneously for boards of different thicknesses by turning a hand wheel placed in the front of the machine, but the pressure on the two rollers is independent, thus enabling the front roller to feed continuously, even if a thin board should happen to follow a thicker one. The feed rollers are driven through spur gearing with machine-cut teeth at the back, thus giving easy access. The pressures for holding the timber down on the table of the machine and against the fence are of the spring type. The bottom cutter-block, which carries six thin knives of high-speed steel, is of the circular type, and is fitted in a cast-iron drawer which can be readily drawn out clear of the machine for changing and adjusting the knives. The adjustable lip, for varying the thickness of the cut taken by the bottom block, is of special design and can be raised and lowered by means of a wedge while the machine is running and locked in any position; the same motion also locks the cutter-block drawer solidly to the main framing of the machine. The bottom cutter-block drawer also has a vertical adjustment by means of a wedge and screw to enable it to be set exactly level with the bed of the machine after the knives have been "jointed." The side cutter-blocks, which are of square section, are not placed opposite to one another, and are both fitted with separate transverse and vertical adjustments. They are also fitted with special cast-iron hoods which serve both for guards and for conveying the chips from the blocks, the hood on the front side cutter being also arranged to act as a side pressure. The top cutter-block is of square section and the carriage is arranged to cant for bevel moulding. The spindles of all the cutter-blocks of both machines run in double row ball journal bearings enclosed in dustproof housings.

In operation the machines fulfilled all that is claimed for them, and turned out remarkably clean work considering the speed.



New High-Speed Moulding and Planing Machine.

Kenya Colony.

The Director of Public Works, Nairobi, is desirous of being supplied with priced catalogues of the building and engineering trades for the Department of Public Works. Catalogues should be addressed to the Director of Public Works, Public Works Department, Head Office, Nairobi.

The Mechanics of the Activated Sludge Process.

At a meeting of the Institution of Sanitary Engineers, held at Caxton Hall, recently, Mr. J. A. Coombs, A.M.I.M.E., A.M.I.E.E., read a paper on a process for purifying crude sludge and trades waste. The paper stated that the activated sludge process was one in which the whole of the organic matter was purified together with the liquid under aerobic conditions. The work of the mechanical engineer had been to design the most suitable tanks and apparatus for providing conditions so that the crude sludge could be treated in continuous flow, just as it reached the sewage disposal works. Mr. Coombs said in spite of the conservative attitude on the part of many of the municipal authorities in this country, the activated sludge process had revolutionised the methods of sewage treatment, and the attitude of the Ministry of Health was to advise the consideration of it where local conditions were suitable. The paper gave a list of thirty-seven installations where the method advocated by the author had been adopted, and where the plants varied in size suitable for populations of from 50 to 18,500 persons.

TENDERS.

EASTER HOLIDAYS.

Owing to the Easter Holidays our next issue will be published on Thursday, March 29. Matter for publication in our editorial pages must, therefore, reach the Editor by first post on Tuesday, March 27.

Communications for insertion under this heading should be addressed to "The Editor," and must reach him *not later than Tuesday evening.*

* Denotes *accepted.* † Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modifications.*

AMPTHILL.—For painting and repairs at Poor Law Institution, for the B.G. Mr. L. Foster, surveyor Flitwick, Beds.:—

A. Cole, Ltd., Luton	£197 0 0
Glass & Son, Bedford	180 15 6
W. Bone, Luton	180 0 0
A. Tooth, Luton	168 16 10
T. W. Facer, Ampthill	168 1 9
H. King, Luton	163 12 0
Dillingham Bros., Flitwick	138 10 0
King & Robinson, Silsoe	138 10 0
H. Bean, Bedford	137 0 0
W. T. Sharpe, Ampthill	134 7 6
*C. A. White, Bedford	126 18 0

BIRMINGHAM.—For the construction of a new bridge over the River Tame, at Bromford-lane, for the T.C.:—

*G. Percy Trentham, Ltd.	£13,649

BLEAN.—For (1) construction of bathroom; (2) decoration of two blocks at the Isolation Hospital, Herne, for the R.D.C. Mr. F. A. Ward, surveyor, Blean Institution, Herne Common, Herne:—

No. 1—	
J. Kemp, Whitstable	£185 0
W. H. Small, Canterbury	183 16
No. 2—	
J. Kemp, Whitstable	315 0
B. Cane, Herne Bay	298 0
W. H. Small, Canterbury	186 19

BRIGHTON.—For alterations to 163, Western road, for Messrs. Carter Bros. Mr. A. J. McLean 3, Palace-place, Brighton:—

Palmer	£1,854 0
Gazes	1,763 0
Parsons & Son	1,761 0
Wheater	1,585 9
Saunders	1,489 0
*Lynn & Sons	1,382 0

BRISTOL.—For concrete work covering the River Frome, Ropewalk to Wade-street, for the T.C. Mr. L. S. McKenzie, City Engineer, 63, Queen-square, Bristol:—

Nott, Brodie & Co., Ltd., Bristol	£29,381 18 8
Mereweather & Sons, Bristol	22,354 6 7
R. Wilkins & Son, Bristol	20,790 5 8
E. Ireland, Bath	20,436 0 0
Yorkshire Hennebique Contracting Co., Ltd., Leeds	16,701 0 0
*W. Cowlin & Sons, Bristol	14,986 0 0

BURY.—For rebuilding Holy Trinity School, for the T.C. Messrs. Biram & Fletcher, architects, 17, George-street, St. Helens:—

*Fearnley & Sons, Ltd., Salford	£8,055

CONGLETON.—For erection of hospital, &c., for the Committee of the Congleton and District War Memorial Hospital. Mr. J. H. Walters, architect, Moody Chambers, Congleton:—

Johnson (Audley), Ltd., Audley, Staffs	£15,696 14 0
J. Cooke, Longport	14,620 0 0
J. Pennington & Co., Bowden	13,992 0 0
H. Goulding & Co., Longton	13,850 0 0
L. Brown & Sons, Wilmslow	13,698 2 6
Gorton & Wilson, Macclesfield	13,387 0 0
A. J. & G. Worrall, Congleton	13,238 0 0
Cooper Bros., Macclesfield	12,936 0 0
T. Roberts, Biddulph	12,820 0 0
W. B. Beattie, Stockport	12,799 0 0
T. & E. Cooke, Congleton	12,785 0 0
P. Pemberton, Tunstall	12,590 0 0
J. Standeven, Congleton	12,590 0 0
Ball & Robinson, Stoke-on-Trent	12,244 12 0
Co-operative Wholesale Soc., Manchester	12,176 0 0
T. Godwin, Hanley	11,877 0 0
*J. Taylor & Son, Basford, Stoke-on-Trent	11,529 16 0

* Accepted subject to modifications.

FOLKESTONE.—For construction of sea outfall with 48 in. cast-iron pipes specially coated to withstand action of sea water, for the Corporation. Messrs. W. H. Radford & Son, engineers, Nottingham:—

*D. J. Somerville & Co., Ltd.	£51,450 0
*The Staveley Coal & Iron Co.	13,034 10

FRINTON-ON-SEA.—For execution of private street works in Witton Wood-lane, for the U.D.C. The Surveyor, Council House, Frinton:—

Battye Bros. & Firth, Sheffield	£820 0 0
Campbell Kenyon & Co., Acton	786 8 6
A. E. Farr, London	725 3 2
*T. W. Heath, Ltd., Kensington	415 5 0

GILLINGHAM.—For extension to Freemasons' Hall. Mr. E. J. Hammond, architect, 21, Balmoral-road, Gillingham, Kent. Quantities by architect:—

Barden & Head, Maidstone	£3,672
G. E. Wallis, Maidstone	3,595
C. E. Skinner, Chatham	3,374
G. Gates, Frindsbury	3,279
A. E. Tong, Gravesend	3,272
H. R. Richardson, Gillingham	3,270
W. F. Blay, Dartford	3,025
A. G. Webb, Rochester	2,646

This extension has been held over.

(Continued on pages 509-510.)

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge.

	£ s. d.
Best Stocks	4 2 0
Second Hard Stocks	3 17 0

Per 1000. Delivered at London Goods Stations.

	£ s. d.		£ s. d.
Flettons, at King's Cross	2 15 0	Best Blue Pressed Staffs.	9 11 6
Do. grooved for plaster	2 17 0	Do. Bullnose	10 1 6
Do. Bullnose	3 10 0	Blue Wire Cuts	7 11 6
Best Stourbridge Fire bricks:—			
2½ in.	11 3 0	3 in.	13 2 0

GLAZED BRICKS—

Best White, Ivory, and Salt Glazed Stretchers	22 0 0	D'ble Str'tch'rs	30 10 0
		D'ble Headers	27 10 0
Headers	21 10 0	One Side and two Ends	31 10 0
Quoins, Bullnose and 4½in. Flats	28 10 0	Two Sides and one End	32 10 0
		Splays and Squints	30 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

	s. d.		
Thames Ballast	13 6	per yard,	delivered 2 miles radius
Pit Sand	16 0	" "	
Thames Sand	16 6	" "	
Best Washed Sand	16 6	" "	
¾ in. Shingle for Ferro-Concrete	14 0	" "	Paddington.
½ in. "	15 0	" "	
¾ in. Broken Brick	10 6	" "	
Fan Breeze	5 6	" "	

Per ton delivered in London area in full van loads.

Best Portland Cement. British Standard Specification Test £2 18 0	£3 5 3
5/- alongside at Vauxhall in 80-ton lots.	
Ferrocrete per ton extra on above	10 0
Roman Cement	8 15 0
Parian Cement	5 13 0
Keene's Cement, White	5 8 0
" " Pink	5 3 0
Plaster, Coarse, Pink	3 0 0
" " White	3 12 6
" Fine	5 12 0
Sirapite, Coarse	3 12 0
" Finish	4 0 0
Grey Stone Lime	2 11 3
Chalk Lime	2 11 3
Best Ground Blue Lias Lime	2 14 0
Hair	17 0 0
Granite Chippings	1 12 0

NOTE.—Sacks are charged 1s. 9d. each and credited 1s. 6d. if returned in good condition within three months, carr. pd.
Stourbridge Fireclay in s'cks 37s. 6d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	2 11
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	3 2
Do. do. delivered on road wagons at Nine Elms Depot	3 3
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 7
Do. do. delivered on road wagons at above stations, per ft. cube	4 8
NOTE.—½d. ft. cube extra for every foot over 20 ft. *average*, and ½d. beyond 30 ft.	
YORK STONE, BLUE—*Robin Hood Quality.*	s. d.
Delivered at any Goods Station London.	
6 in. sawn two sides landings to sizes (under 30 ft. super.) Per Ft. Super	5 3
6 in. rubbed two sides, ditto "	5 9
3 in. sawn two sides slabs (random sizes) "	2 1½
2 in. to 2½ in. sawn one side slabs (random sizes) "	1 5½
1½ in. to 2 in. ditto, ditto "	1 3
HARD YORK—	
Delivered at any Goods Station London.	
Scappled random blocks Per Ft. Cube	5 6
6 in. sawn two sides landing to sizes (under 40ft. super.) Per Ft. Super	5 4½
6 in. rubbed two sides ditto "	6 0½
4 in. sawn two sides slabs (random sizes) "	2 10
3 in. ditto, ditto "	2 5
2 in. self-faced random flags Per Yard Super	7 11

ARTIFICIAL STONE.

	s. d.
Delivered in London Area in full van loads.	
Plain per ft. cube.	6 9
Moulded " "	8 3
Cills " "	9 0

WOOD.

GOOD BUILDING DEAL.

Inches	per stan.	Inches	per stan.
4 × 11	£34 0	3 × 6	£23 0
4 × 9	34 0	3 × 11	32 10
4 × 8	26 0	2 × 11	32 10
4 × 7	24 0	3 × 9	30 0
3 × 8	24 0	2½ × 9	30 0
3 × 7	2 : 10	3 × 4½	22 10
2½ × 7	23 10	3 × 4	22 10

PLANED BOARDS.

1 × 11	38 10	1 × 9	36 0

PLAIN EDGE FLOORING.

Inches	per sq.	Inches	per sq.
½	20/-	1½	32/6
¾	22/-	1¾	37/6
1	25/-		

WOOD (*Continued*).

TONGUED AND GROOVED FLOORING. Inches	per sq.	MATCHINGS (BEST). Inches	per sq.
1	25/-	½	17/6
1¼	32/6	¾	22/-
1½	37/6	1	25/-

Inches	BATTENS.	s. d.
1 × 2		2 4 per 100 ft.

SAWN LATHS.

Per bundle				0 2 9	
Dry Wainscot Oak, per ft. super, as inch	0 2 0	to	0 2 6		
½ in. do. do.	0 1 6	to	0 2 0		
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0 1 9	to	0 2 6		
Cuba Mahogany	0 3 6	to	0 4 0		
Teak (Rangoon, Moulmein or Java), per load	45 0 0	to	50 0 0		
American Whitewood planks, per ft. cube	0 14 0	to	0 16 0		
Best Scotch Glue per cwt	4 10 0	to	—		
Liquid Glue, per cwt.	4 7 0	to	5 10 0		

SLATES.

1st quality slates from Bangor or Portmadoc in truck loads delivered London area. Per 1,000 of 1,200.

	£ s. d.		£ s. d.
24 by 12	41 15 0	18 by 10	21 10 0
22 by 12	37 15 0	18 by 9	20 15 0
22 by 11	34 15 0	16 by 10	19 12 6
20 by 12	33 0 0	16 by 8	15 5 0
20 by 10	28 10 0		

TILES.

Per 1,000 f.o.r. London.

	£ s. d.
Best machine-made tiles from Broseley or Staffordshire district	5 7 6
Ditto hand-made ditto	5 12 6
Ornamental ditto	5 17 6
Hip and valley tiles (per dozen) Hand made	0 9 6
Machine made	0 9 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—

	£ s. d.
R. S. Joists, cut and fitted	12 10 0
Plain Compound Girders	14 10 0
" Stanchions	16 10 0
In Roof Work	19 10 0

WROUGHT IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £7 net value delivered direct from Works. 2½ percent. less above gross discounts, carriage forward if sent from London Stocks.)

	Tubes.	Fittings.	Flanges.
Gas	60 %	60 %	70 %
Water	55 %	55 %	65 %
Steam	50 %	50 %	60 %
Galv'd—			
Gas	47½ %	47½ %	57½ %
Water	41½ %	41½ %	51½ %
Steam	35 %	35 %	45 %

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe.	Bends, stock angles.	Branches, stock angles.
	s. d.	s. d.	s. d.
2 in. per yd. in 6fts plain	2 9	2 0	2 5
2½ in. "	3 2½	2 3	3 0
3 in. "	3 9½	2 5	3 8
3½ in "	4 2	3 0	4 2
4 in. "	4 7½	3 5	4 11

RAIN-WATER PIPES, &C.

	Pipe.	Bends, stock angles.	Branches, stock angles.
	s. d.	s. d.	s. d.
2 in. per yd. in 6fts. plain	1 8½	1 ½	1 9
2½ in. "	1 11	1 6	2 1
3 in. "	2 3½	1 10½	2 9½
3½ in. "	2 8½	2 2½	3 3
4 in. "	3 2	2 8	3 11½

L.C.C. DRAIN PIPES.—9 ft. lengths. London Prices per yd.: 4 in. 5/1. 5 in. 6/8. 6 in. 9/8. 9 in., 7/10.

	Per ton in London. £ s. d.		£ s. d.
IRON—			
Common Bars	13 0 0	to	14 0 0
Staffordshire Crown Bars good merchant quality	14 0 0	to	15 0 0
Staffordshire "Marked Bars"	16 0 0	to	17 0 0
Mild Steel Bars	12 10 0	to	13 10 0
Steel Bars, Ferro-Concrete quality, basis price	12 10 0	to	13 10 0
Hoop Iron, basis price	15 10 0	to	16 10 0
" Galvanised	29 0 0	to	31 0 0
Soft Steel Sheets, Black—			
Ordinary sizes to 20 g.	14 10 0	to	15 10 0
" " 24 g.	15 10 0	to	16 10 0
" " 26 g.	17 10 0	to	18 10 0
Sheets Flat Best Soft Steel, C.R. & C.A. quality—			
Ordinary sizes, 6ft. by 2ft. to 3ft. to 20 g.	20 10 0	to	21 10 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 22 g. and 24 g.	21 10 0	to	22 10 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 26 g.	23 10 0	to	25 10 0
Flat and Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 9ft. 20 g.	20 0 0	to	21 0 0
Ordinary sizes, 6ft. to 9ft. 22 g. and 24 g.	20 10 0	to	21 10 0
Ordinary sizes, 6ft. to 9ft. 26 g.	22 10 0	to	23 10 0

METALS (*Continued*).

	Per ton in London. £ s. d.		£ s. d.
Sheets Galvanised Flat, Best quality—			
Best Soft Steel Sheets, 6ft. by 2ft. to 3ft. to 20g. and thicker	22 10 0	to	23 10 0
Best Soft Steel Sheets, 22 g. and 24 g.	23 10 0	to	25 10 0
Best Soft Steel Sheets, 26 g.	25 0 0	to	26 0 0
Cut Nails, 3in. to 6in. (under 3in. usual trade extras.)	21 10 0	to	23 0 0

METAL WINDOWS—Standard sizes suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1/4 to 1/7 per foot super.

LEAD, &c.

Delivered in London.

	£ s. d.		£ s. d.
LEAD—Sheet, English, 4 lb. and up	38 0 0	to	—
Pipe in coils	38 10 0	to	—
Soil Pipe	41 0 0	to	—
Compo pipe	42 0 0	to	—

NOTE—Country delivery, 30s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills per ton	28 10 0	to	—
Do., ex country, carriage forward per ton	27 10 0	to	—

COPPER—			
Strong Sheet per lb	0 2 3	to	—
Thin " "	0 2 4	to	—
Copper nails "	0 2 3	to	—
Copper wire "	0 2 4	to	—
TIN—English Ingots "	0 2 4	to	—
SOLDER—Plumbers' "	0 1 2	to	—
Tinmen's "	0 1 4	to	—
Blowpipe "	0 1 7	to	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft.		Per Ft.
15 oz. fourths	3d.	32 oz. fourths	5½d.
" thirds	4½d.	" thirds	10d.
21 " fourths	4½d.	Obscured Sheet, 15 oz.	3½d.
" thirds	6d.	21 "	5½d.
26 " fourths	5½d.	Fluted 15 oz.	7½d. 21 oz. 9½d.
" thirds	7½d.	Enfilled 15 "	5½d. 21 " 7d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
⅛ Rolled plate	4½d.
⅛ Rough rolled	5½d.
¼ Rough rolled	5½d.
Figured Rolled, Oxford Rolled, Baltic, Oceanne Arctic, Stippolyte, and small and large Flemish white	6½d.
Ditto, tinted	9d.
Rolled Sheet	6d.
White Rolled Cathedral	5½d.
Tinted do.	7½d.

Cast Plate is same price as rough rolled.

PAINTS, &c.

			£ s. d.
Raw Linseed Oil	in pipes per gallon		0 5 9
" " "	in barrels "		0 5 11
" " "	in drums "		0 6 2
Boiled " "	in barrels "		0 6 3
" " "	in drums "		0 6 5
Turpentine in barrels	"		0 9 3
" in drums (10 gall.)	"		0 9 6
Genuine Ground English White Lead, per ton (in not less than 5 cwt. casks.)			58 15 0
GENUINE WHITE LEAD PAINT—			
"Father Thames," "Nine Elms," "Park," "Supremus" and other best brands (in 14 lb. tins) not less than 5 cwt. lots	per ton delivered		80 15 0
Red Lead, Dry (packages extra)	per ton		42 0 0
Best Linseed Oil Putty	per cwt.		0 16 0
Filocol	per cwt.		0 15 6
Size. X D Quality			fhn. 0 2 6

VARNISHES, &c.

		Per gallon. £ s. d.
Oak Varnish	Outside	0 14 0
Fine ditto	ditto	0 16 0
Fine Copal	ditto	0 18 0
Pale Copal	ditto	1 0 0
Pale Copal Carriage	ditto	1 4 0
Best ditto	ditto	1 12 0
Floor Varnish	Inside	0 18 0
Fine Pale Paper	ditto	0 18 0
Fine Copal Cabinet	ditto	1 2 0
Fine Copal Batting	ditto	1 0 0
Hard drying Oak	ditto	0 18 0
Fine Hard drying Oak	ditto	0 19 0
Fine Copal Varnish	ditto	1 0 0
Pale ditto	ditto	1 2 0
Best ditto	ditto	1 12 0
Best Japan Gold Size		0 12 0
Best Black Japan		0 12 0
Oak and Mahogany Stain (water)		0 12 0
Brunswick Black		0 9 0
Berlin Black		0 14 0
Knotting (patent)		1 5 0
French and Brush Polish		0 17 6
Liquid Dryers in Terebine		0 10 0
Cuirass Black Enamel		0 7 6

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

CURRENT PRICES FOR BUILDING WORK IN LONDON.*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	15	0
Add if in clay	" "	1	6
Add for every additional depth of 6 ft.	" "	0	9
Planking and strutting to trenches	per foot super	0	6
Do. to sides of excavation, including shoring	" "	1	2

CONCRETOR.

		s.	d.
Portland cement concrete in foundation 1 to 6 ..	per yard cube	40	0
Add if in underpinning in short lengths	" "	9	0
Add if in floors 6 in. thick	" "	3	9
Add if in beams	" "	4	6
Add if aggregate 1 : 2: 4	" "	11	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	" "	3	6

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	34	0	0
Add if in stocks	"	8	10	0
Add if in Staffordshire blues	"	24	0	0
Add if in Portland cement and sand	"	3	0	0

FACINGS.

		s.	d.
Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1½

POINTING.

		s.	d.
Neat flat struck or weathered joint	" "	0	0	3

ARCHES.

		s.	d.
Extra only to the price of ordinary brickwork :—			
Fair external in half brick rings	" "	0	0	10
Axed in stocks	" "	0	1	9
Rubbed and gauged jointed in putty camber or segmental	" "	0	6	0

SUNDRIES.

		s.	d.
Damp course in double course of slates breaking joint and bedded in Portland cement	" "	0	1	3
Setting ordinary register grates and stoves	each	1	1	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	"	5	5	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard sup.	7	6
Three-quarter-inch vertical damp course	" "	11	0
¾ inch on flats in two thicknesses	" "	8	6
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	" "	1	4

MASON.

		s.	d.
York stone templates fixed	per foot cube	15	0
York stone sills fixed	" "	27	0
Bath stone and all labour fixed	" "	12	0
Portland stone fixed	" "	21	6

SLATER.

		s.	d.
Welsh 16 in. × 8 in. 3 in. lap, including nails....	per square	79	9
Do. 20 in. × 10 in. Do. Do.	"	90	9
Do. 24 in. × 12 in. Do. Do.	"	99	0

CARPENTER AND JOINER.

		s.	d.
Fir framed in plates	per foot cube	5	6
Do. joists	" "	6	0
Do. roofs, floors and partitions	" "	6	6
Do. trusses	" "	8	6

		¾"	1"	1¼"	2"
Deal rough close boarding	per sq.	42/-	48/-	56/-	85/-

		s.	d.
Flat centering for concrete floor, including struts or hangers .. "		60	0
Do. to beams	per ft. sup.	1	6
Centres for arches	"	2	0
Gutter boards and bearers	"	1	1

FLOORING.		¾"	1"	1¼"	1½"
Deal edges shot	per sq.		49/-	58/-	67/-
Do. tongued and grooved	"		54/-	65/-	72/-
Do. matchings	"	45/-	55/-		
Moulded skirting, including backings and grounds	per ft. sup.	1/8	2/1	2/3	2/9

SASHES AND FRAMES.		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	10
Two Do. Do. Do.	" "	2	3
Add for fitting and fixing	" "	0	6
Deal-cased frames with 1 in. inner and outer linings, 1¼ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares double hung, double hung with pulleys, lines and weights; average size	" "	4	0

DOORS.		1¼"	1⅜"	2"
Two-panel square framed	per ft. sup.	2/4	2/7	2/9
Four-panel Do.	"	2/8	3/0	3/3
Two-panel moulded both sides	"	3/0	3/3	3/6
Four-panel Do. Do.	"	3/3	3/7	3/10

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	14	0

		1"	1¼"	1½"
Plain deal jamb linings framed	per ft. sup.	1/9	1/10	2/1
Deal shelves and bearers	"	1/6	1/8	1/11
Add if cross tongued	"	2d.	2d	2d

STAIRCASES.

	1"	1¼"	1½"	2"	2½"
Deal treads and risers in and including rough brackets	2/1	2/4	2/9	—	—
Deal strings wrot on both sides and framed	1/8	2/-	2/2	2/8	—

		s.	d.
Housings for steps and risers	each	0	11
Deal balusters, 1 in. × 1¼ in.	per ft. run	0	9
Mahogany handrail; average 3 in. × 3 in.	" "	6	0
Add if ramped	" "	11	10
Add if wreathed	" "	23	9

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/4
Sash fasteners	11½d.	Mortice locks	5/3
Casement fasteners	1/5	Patent spring hinges and letting in to floor and making good	19/-
Casement stays	1/2		
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	17	0
Plain compound girders	"	20	0
Do. stanchions	"	23	0
In roof work	"	28	0

RAIN-WATER GOODS.

		3"	4"	5"	6"
Half-round plain rebated joints ..	ft. run	1/11	2/4½	3/7	4/-
Ogee Do. Do. ..	"	2/4½	3/1	3/10	4/9
Rain-water pipes with ears	"	2/9	3/7		
Extra for shoes and bends	each	4/4	5/11		
Do. stopped ends	"	1/11	2/4½	3/7	4/-
Do. nozzles for inlets	"	2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt	54	0
Do. Do. in flats	"	50	0
Extra labour and solder in coated cesspools	each	7	4
Welt joint	per ft. run.	0	6
Soldered seam	" "	1	10
Copper nailing	" "	0	7

		¼"	½"	1"	1½"	2"	4"
Drawn lead waste	per ft. run	10d.	1/6	1/9	3/1	3/10	
Do. service	"	1/5	1/11	2/3	3/6		
Do. soil	"						6/2
Bends in lead pipe	each					3/3	8/2
Soldered stop ends	"	1/2	1/8	2/1	2/10	3/6	
Red lead joints	"	11d.	1/-	1/3	1/11	2/4	4/10
Wiped soldered joints	"	2/10	3/6	4/-	4/11	6/6	9/9
Lead traps and cleaning screws	"				14/7	19/6	
Bib cocks and joints ..	"	6/4	9/7	15/4	41/-		
Stop cocks and joints	"	15/4	17/2	25/8	64/-		

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	2	6
Do. Do. Sirapite	" "	2	8
Do. Do. Keen's	" "	3	6
Add sawn lathing	" "	1	6
Add metal lathing	" "	2	10
Portland cement screed	" "	1	11
Do. plain face	" "	3	6
Mouldings in plaster	per 1 girth	0	3
One-and-a-half granolithic pavings	per yard sup.	6	3

GLAZIER.

		s.	d.
21 oz. sheet plain	per foot sup.	1	0
26 oz. Do.	" "	1	3
Obscured sheet	" "	1	7
¼ in. rolled plate	" "	1	0
¼ in. rough rolled or cast plate	" "	1	1
¼ in. wired cast plate	" "	1	7

PAINTER.

		s.	d.
Preparing and distempering, 2 coats	per yard sup.	1	0
Knotting and priming	" "	0	8
Plain painting 1 coat	" "	0	11
Do. 2 coats	" "	1	7
Do. 3 coats	" "	2	4
Do. 4 coats	" "	3	0
Graining	" "	2	5
Varnishing twice	" "	1	11
Sizing	" "	0	4
Flatting	" "	0	8
Enamel	" "	1	3
Wax polishing	per foot sup.	0	9
French polishing	" "	1	3
Preparing for and hanging paper	per piece	2/- to 4/-	

* These prices apply to new buildings only. They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 11 should be added for Employers' Liability and National Health and Unemployment Acts and from 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright.

TENDERS—*Continued from page 506.*

HAVANT.—For carrying out Drayton sewerage scheme, for the R.D.C. :—

*John Croad, Southsea	£16,287

HORNSEY.—For (1) building work to house: (2) alterations to bars and building at the "Three Compasses," High-street, Hornsey, N.8. Mr. William Stewart, F.R.I.B.A., architect, Aldgate, E.C. :—

*(1) Sydney G. Goulding, Hornsey	£163
(2) Sydney G. Goulding, Hornsey	863
*(2) Speechley & Smith, Richmond	853

HYTHE.—For conversion of baths, construction of new shelters, &c., for the Borough of Hythe. Messrs. Bromley & Dahl, architects, Radnor Chambers, Folkestone :—

Atkins, Bromley and Folkestone	£6,963
Blay & Co., Dartford and London	6,876
Browning, Canterbury	6,465
Wallis & Son, Maidstone	6,389
G. H. Denne & Son, Deal	6,353
Vant, Folkestone	6,147
Hayward & Paramor, Folkestone	6,036
Merton Hughes, London	5,981
Scott Bros., Hythe	5,904
†O. Marx, Folkestone	5,724

LONDON.—The Kensington B.C. has accepted the following annual contracts :—

*W. & J. Glossop—Tar spraying macadam and gravel carriageways, 3¾d. per yard: wood paved carriageways, 3¼d. per yard.
*A. Thomson & Co.—Wood-paving repairs, at schedule prices.
*W. Peters—Masons' and paviors' work, at schedule prices.
*A. & F. Mannelle—Broken blue Guernsey granite, £1 2s. 10d. per ton.
*London Granite Co.—Broken quenast granite, £1 5s. per ton.
*A. & F. Mannelle—Granite siftings, £1 1s. 4d. per ton.
*H. Sabey & Co.—Uncrushed shingle to Kensal Wharf, 11s. per ton.
*S. West, Ltd.—Uncrushed shingle to Chelsea Wharf, 11s. 6d. per ton.
*Sankey & Co.—Stoneware drain pipes, &c., at schedule prices.
*Young & Son—Lime, cement and bricks, at schedule prices.
*A. Roberts & Co.—Jobbing sewer work, at schedule prices.
*A. Roberts & Co.—Jobbing builders' work, at schedule prices.

LONDON.—Supply of concrete mixer to the St. Marylebone B.C. :—

*Allied Machinery Co.	£260

LONDON.—Erection of the first two block of tenements, the laundry and boiler house, and the coal and perambulator store required for the whole of the tenements to be erected on the Fisherton-street site, for the St. Marylebone B.C. :—

	1st Block of Dwellings.	Laundry and Boiler House.	Coal and Perambulator Store.	2nd Block if erected at same time as 1st Block.	2nd Block if deferred until later date.
Walker & Slater, Ltd., Uttoxeter Old-road, Derby	£12,118 0 0	£1,850 0 0	£312 0 0	£12,000 0 0	+£118
W. Alban Richards & Co., Ltd., 19, St. James's-street, S.W. 1	12,250 0 0	1,786 0 0	279 0 0	12,000 0 0	—
O. F. Drever & Sons, Ltd., Kettering, Northants	12,244 0 0	1,784 0 0	314 0 0	12,044 0 0	+200
Lovell & Sons, 6, Bathurst-street, Lancaster Gate, W. 2	12,253 0 0	1,821 0 0	298 0 0	12,253 0 0	Nil.
Guttridge, Park-road, Peterborough	12,347 0 0	1,845 0 0	299 0 0	12,250 0 0	— 50
J. E. Billings & Co., Ltd., Canal-street, Oxford	12,913 0 0	1,794 0 0	310 0 0	12,613 0 0	+300
F. Troy & Co., Ltd., 194-196, Finchley-road, N.W. 3	12,800 0 0	2,067 0 0	387 0 0	12,500 0 0	+300
Thomas Shillitoe, 3, Electric-parade, Seven Sisters-road, N.7	12,982 7 11	1,962 7 11	393 0 0	12,552 0 0	+350
Edwards & Co., (Doncaster), Ltd., Sardinia House, Kingsway	12,986 0 0	1,899 0 0	327 0 0	12,854 0 0	+268
W. Pattinson & Sons, Ltd., 38, Parliament-street, S.W. 1	13,261 0 0	1,941 0 0	305 0 0	13,127 0 0	13,127
Foster & Hammond, Norwood Junction, S.E. 25	13,929 0 0	1,892 0 0	339 0 0	13,929 0 0	13,929
The Unit Construction Co., Ltd., 168, Regent-street, W. 1	14,547 0 0	2,140 0 0	416 0 0	14,200 0 0	+300
S. E. Moss, 2, Bournemouth Park-road, Southend	14,700 0 0	1,750 0 0	350 0 0	14,700 0 0	—
Frederick Hopkinson & Co. (Worksop), Ltd., Notts.	14,650 6 8	2,306 10 8	431 5 6	14,650 6 8	Nil
William Willett, Ltd., Sloane-square	15,513 0 0	2,179 0 0	396 0 0	17,810 0 0	+220
J. C. Rackham, Harrow Weald, Middlesex	17,899 0 0	2,731 0 0	544 0 0	21,164 0 0	21,164

LONDON.—For execution of general works and repairs to sewers, bridges, subways, &c., for one year, for the London County Council :—

	Percentage *above* prices in First Schedule. (Measured work.)			Percentage *above* rates in Second Schedule for labour for day work.
	For works on north and south sides of Thames.	For works on north side of Thames.	For works on south side of Thames.	
*John Mowlem & Co., Ltd., S.W.1	105	105	105	9½
F. R. Hipperson, Norwich	115	120	115	12½
G. J. Anderson, E.14	—	120	—	15
G. B. Farrar & Co., E.1	150	150	150	15
M. Greenwood & Sons, Ltd., N.W.10	150	150	150	16

LONDON.—The Lewisham B.C. have accepted the following annual contracts :—

Repairs to Asphalte Footpaths (approximate area required 8,000 super yards)—
*Ragusa Asphalte Paving Co., Ltd., at 4s. 11d. per yard super for new asphalte, and 3s. 5½d. per yard for half-new asphalte (old asphalte being supplied by the Council).

Tar-spraying Roads (approximate area 700,000 super yards)—
*W. & J. Glossop, at 2.5d. per yard super for first-coat, and 2.25d. for second-coat work, contractor supplying grit; and 1.9d. per yard super for first-coat, and 1.65d. for second-coat work, Council supplying grit.

Tar-paving for Footways (approximate quantity required :—Coarse, 200 tons; fine, 400 tons)—
*Chittenden & Simmons, Ltd., for coarse tar-paving, delivered by road, at 38s. 9d. per ton, and fine tar-paving, at 43s. 9d. per ton.

LONDON.—For six months' supplies, for Works Committee of St. Marylebone B.C. :—

Broken Guernsey granite—
A. & F. Mannelle, Ltd., 4 & 5, Throgmorton-avenue, E.C. ..... £1 8s. 6d. per ton.

Footway kerb and pitching—
C. H. McGuinness & Co., Ltd., 9, Victoria-street, S.W. ..... 3s. 3½d. per ft.

Lime and bricks—
A. H. Lavers & Co., 179, Upper Kennington-lane, S.E. ..... £2 7s. 6d. per ton.

Pitch creosote oil and tar—
(a) Smarts Tar Distillery, Ltd., Poplar ..... £7 15s. 6d. per ton.
(b) Grindley & Co., Ltd., Poplar ..... 10½d. per gal. (creosote oil), 9½d. per gal. (tar)

Tarred slag Macadam—
Philip, Shepherd & Co., Ltd., Mansell-road, W. 3 ..... £1 12s. per ton.

Tar paving—
Constable Hart, 106A, Cannon-street, E.C. ..... £1 17s. 6d. per ton.

Sewer ironwork—
Pryke & Palmer, Ltd., 40 & 41, Upper Thames-street, E.C. ..... 8s. 3d. per cwt.

Ballast and sand—
(a) H. Covington & Sons, Ltd., Battersea ..... 12s. 2d. per yd.
(b) H. Boyer, Paddington ..... 14s. 6d. & 15s. 9d. per yd.
(c) W. Boyer & Sons, Paddington ..... 9s. 10d. cu. yd.

LONDON.—For construction of storm relief sewer between Clapham-road and the Thames, for the L.C.C. :—

	Amount of tender, after arithmetical correction in certain cases. Tenders opened January 9, 1923.	*Tenders opened February 27 1923.*
	£ s. d.	£ s. d.
Davidson & Sykes, Ltd., S.W.	197,721 9 2	—
*Unit Construction Co., Ltd., W.	210,939 0 0	210,938 19 8
William Muirhead, Macdonald, Wilson & Co., Ltd., S.W.	213,209 6 8	213,209 6 8
Henry Boot & Sons (London), Ltd., S.W.	220,802 19 1	215,740 9 1
Morrison Bros., S.W. (*alternative* (ii))	—	218,026 0 11
Walter Scott & Middleton, Ltd., S.W.	218,920 11 11	222,667 2 1
Consolidated Construction Co., Ltd., E.C.	225,773 7 5	226,222 12 5
Sir William Arrol & Co., Ltd., S.W. (*alternative* ii))	227,971 4 3	228,570 4 3
J. Parkinson & Sons (Blackpool), Ltd., W.C.	234,968 12 6	—
Kinnear, Moodie & Co., W.	236,747 10 4	236,747 10 4
Baldry, Yerburgh & Hutchinson, Ltd., S.W.	247,707 14 8	236,980 12 6
Crawford Bros., Nuneaton	—	239,636 3 6
Mitchell Bros., Sons & Co., Ltd., S.W.	242,458 5 9	242,458 5 9
James Byrom, Ltd., W.	255,978 12 10	255,978 12 10
John Price & Son, S.W.	265,160 17 10	265,160 17 10
Metropolitan Tunnel & Public Works Co., Ltd., S.W.	—	276,112 8 9
Charles Brand & Son, S.W.	278,292 1 4	—
S. Pearson & Son (Contracting Dept.), Ltd., S.W.	295,967 18 6	—
Campbell, Kenyon & Co., W.	616,773 16 2	—

LONDON.—For the erection of elementary school at Bellingham Housing Estate, Lewisham, for the L.C.C. :—

John Garratt & Sons, Balham	£13,024 0 0
G. E. Wallis & Sons, Ltd., Haymarket	12,965 0 0
H. & F. H. Higgs, Ltd., Hernehill	12,374 0 0
W. Akers & Co., Ltd., Norwood	12,383 0 0
James Carmichael, Ltd., Battersea	12,372 0 0
T. D. Leng, Deptford	12,260 0 0
Triggs & Co., Clapham	12,241 0 0
Holliday & Greenwood, Ltd., Battersea	12,234 0 0
George Parker & Son, Ltd., Peckham	12,214 0 0
Jas. Smith & Sons, Ltd., Norwood	12,180 0 0
J. & C. Bowyer, Ltd., Norwood	11,968 0 0
Galbraith Bros., Ltd., Camberwell	11,950 0 0
John Laing & Sons, Ltd., Holborn	11,097 2 1
*Edwards Construction Co., Ltd., Eltham	11,053 16 2

LONDON.—For laying out of grounds at Averyhill Training College, for the L.C.C. :—

H. Farrow, Golders Green	£1,495
Mears Bros., Lewisham	1,293
*S. B. Wood, Kidbrooke	1,185

LONGTOWN.—For erection of dwelling-house and farm buildings. Mr. J. George Murray, surveyor and engineer, Kirklinton, Carlisle :—

All trades—
G. D. Carruthers & Co., Gretna £2,400 0 0
J. & R. Bell, Carlisle 2,389 19 6
E. J. Hill, Carlisle 2,217 0 0
E. Musgrave, Carlisle 1,926 19 6
*James Millar, Carlisle 1,922 5 7

Building—
J. & R. Bell, Carlisle 1,321 5 0
A. Blakeley & Sons, Carlisle 1,201 13 0
E. Musgrave, Carlisle 960 8 3
James Millar, Carlisle 956 15 0

Carpenter and Joiner—
Craig & Macdonald, Carlisle 731 14 11
A. M. Robertson, Gretna 675 0 0
E. Musgrave, Carlisle 610 3 11

Plumber—
D. Thomson & Sons, Carlisle 162 10 4
John Hill & Sons, Longtown 153 4 0

PONTYDAWE.—For work of completing houses, at Alltwen site, for the U.D.C. :—

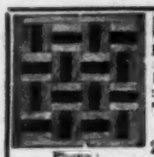
*Mathias & Davies, Alltwen	£3,107

RHYMNEY.—For erecting ten "A" type houses, for the U.D.C. :—

*Edwin Steel: (at £337 17s. 5½d. each)	£3,378 15 6

LOUGHBOROUGH.—For electricity works extension :—

A. Waddington & Son, Sheffield	£15,130	4	10
E. Morley & Son, Derby	14,000	0	0
W. Walkerdine, Ltd., Derby ..	13,195	0	0
T. Barker & Sons, Loughborough	12,995	0	0
H. Arnold & Son, Doncaster ..	12,334	0	0
W. Corah & Son, Loughborough	12,187	0	0
A. J. Wileman, Loughborough	12,132	0	0
A. Faulks, Loughborough	12,100	0	0
*W. Moss & Sons, Loughborough	11,850	0	0
H. Hammond & Sons, Loughborough	11,650	0	0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Telegrams: Gliksten 'Phone London.

ROMFORD.—For erection of house, &c., at Gidea Park, for Mrs. S. R. Wright. Mr. Arthur Bentley, F.R.I.B.A., architect, Squirrels Heath, Essex :—

	For house.	For garage, outbuildings, and drive
T. G. Bailey, Chelmsford	£3,775 ..	£433 0
*Dowsing & Davis, Romford ..	3,629 ..	419 8

SWANSEA.—For asphalte macadam paving of Mumbles-road and Sketty-road, for the T.C. :—

*Western Trinidad Lake Asphalt Co., for 21,967 sup. yds. of 3 in. asphalt macadam paving at 8s. 9d. per sq. yd. with a five years' free maintenance, and 70,921 sq. yds. of 4 in. asphalt macadam paving at 10s. per sq. yd. with a five years' free maintenance and another five years at 5d. per sq. yd. per annum.

WALTHAMSTOW.—For additions to factory for Messrs. Chas. Barrett & Co. Mr. W. Penfold, architect and surveyor, 4, Leamington-avenue, Walthamstow, E.17 :—

Stevens & Jackson	£1,585
J. Jarvis & Sons, Ltd.	1,450
G. Parker & Sons, Ltd.	1,439
A. Peachey & Co., Ltd.	1,380
A. G. Barton	1,325
J. & J. Dean	1,180

WATFORD.—For extension of Infirmary, for the Board of Guardians :—

E. Lanane & Co., Ltd., Darley Dale	£5,822	0	0
Payne Bros., Leavesden	5,140	0	0
A. J. Eldridge, Vicarage-road, Watford	4,837	5	2
Orper & Slater, Ltd., Derby	4,820	0	0
Clifford & Gough, Watford ..	4,765	0	0
William Willett, Ltd., Sloane-square, London	4,650	0	0
W. King & Sons, Market-street, Watford	4,649	0	0
T. Raban, Ltd., Baldock	4,625	0	0
W. Moss & Son, Ltd., Bloomsbury-street, London	4,468	0	0
Clark Bros., Ltd., Watford	4,418	0	0
Arthur Cole, Ltd., Luton	4,289	0	0
*C. Brightman & Sons, Ltd., Watford	4,240	0	0

WISBECH.—For erection of residence, Leverington, for Mr. Alex. R. Boyd. Mr. J. W. Crouch, architect and surveyor, 3, Post Office-lane, Wisbech. Quantities by architect :—

Elworthy & Co., Upwell	£2,504	10	-
J. H. Johnson & Son, Wisbech	2,495	17	-
Henry Rands & Son, Ltd., Wisbech ..	2,295	0	-
*White & Holmes, Elm, near Wisbech..	2,054	10	0

WITHAM.—For the erection of six pairs of semi-detached houses in Braintree-road, for the U.D.C. :—

*M. Richards & Sons, Witham, per pair £730

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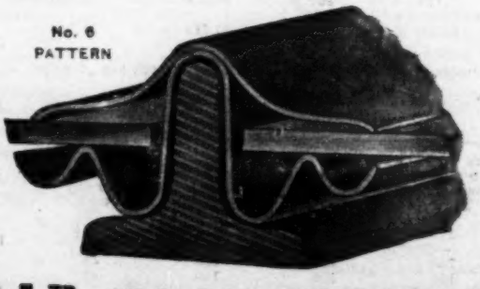
No. 6 PATTERN



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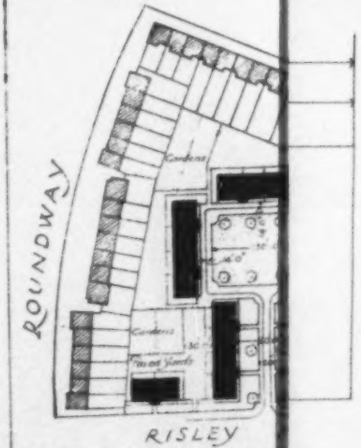
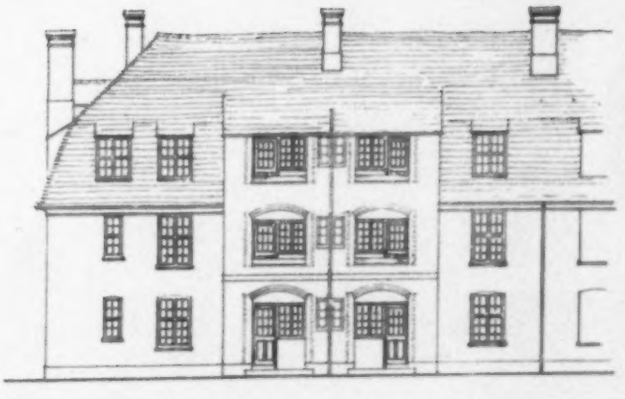
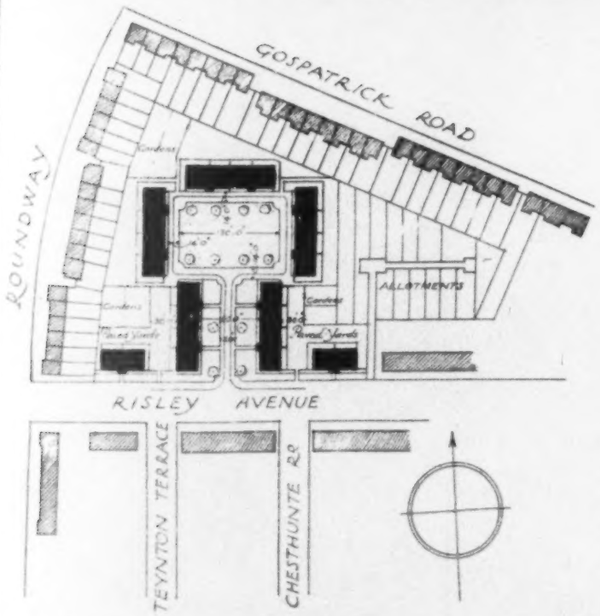
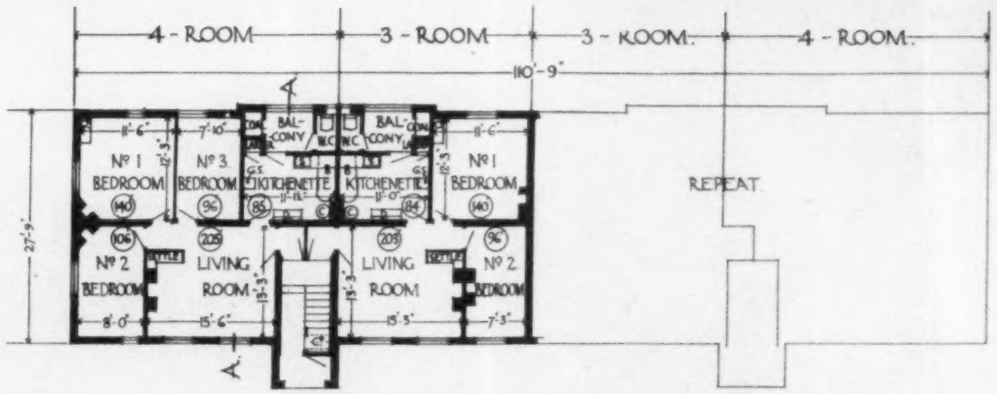




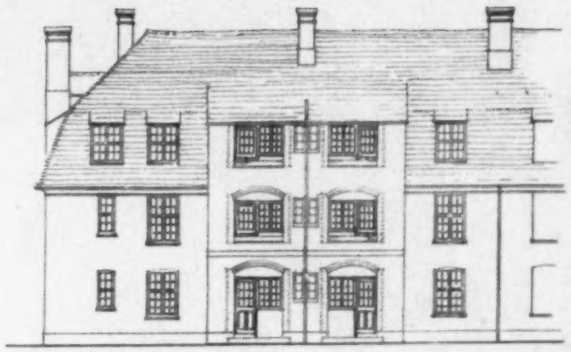
BACK ELEVATION





PLAN.

NOTE :
B. denotes BATH.
C. " COPPER.
Cp " CUPBOARD.
D. " DRESSER.
G.S. " GAS STOVE
S. " SINK.



BACK ELEVATION

SCALE : 8 FEET TO 1 INCH.

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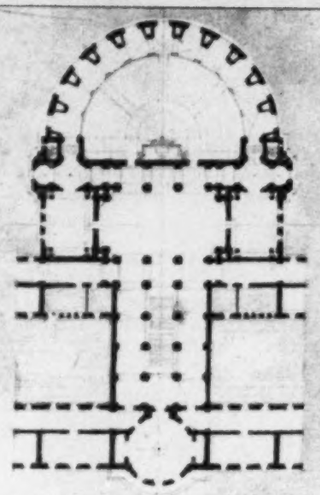
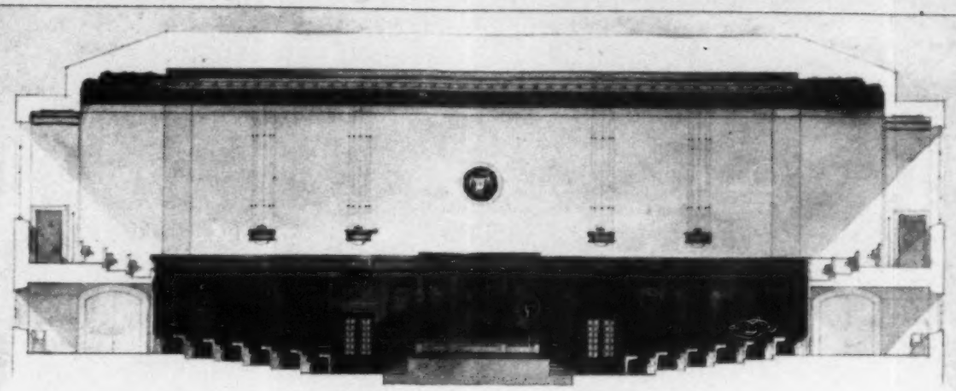
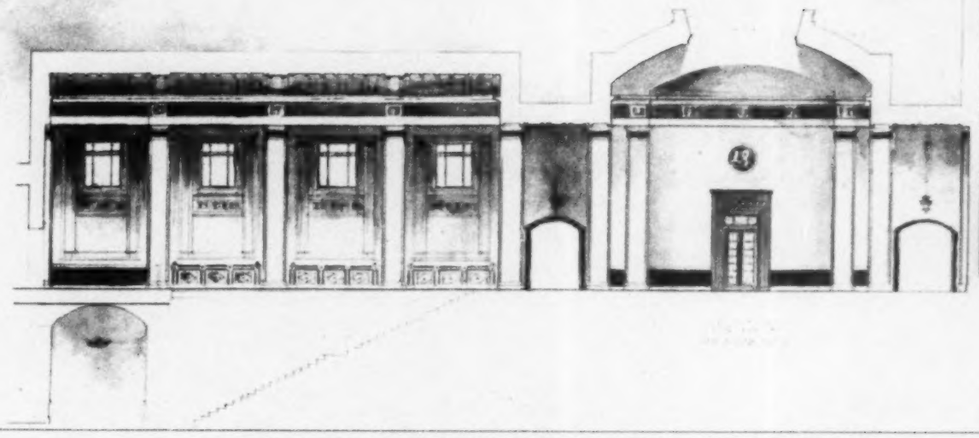
SCHEME FOR RE-HOUSING ACCOMMODATION IN THREE-STOREY FLATS AT WHITE HART LANE ESTATE,

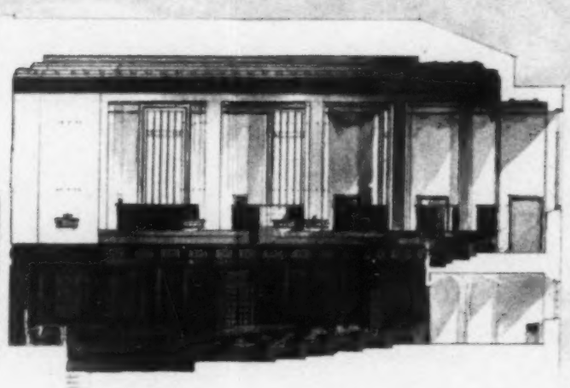
Mr. G. Topham Forrest, F.R.I.B.A., Architect to the Council.



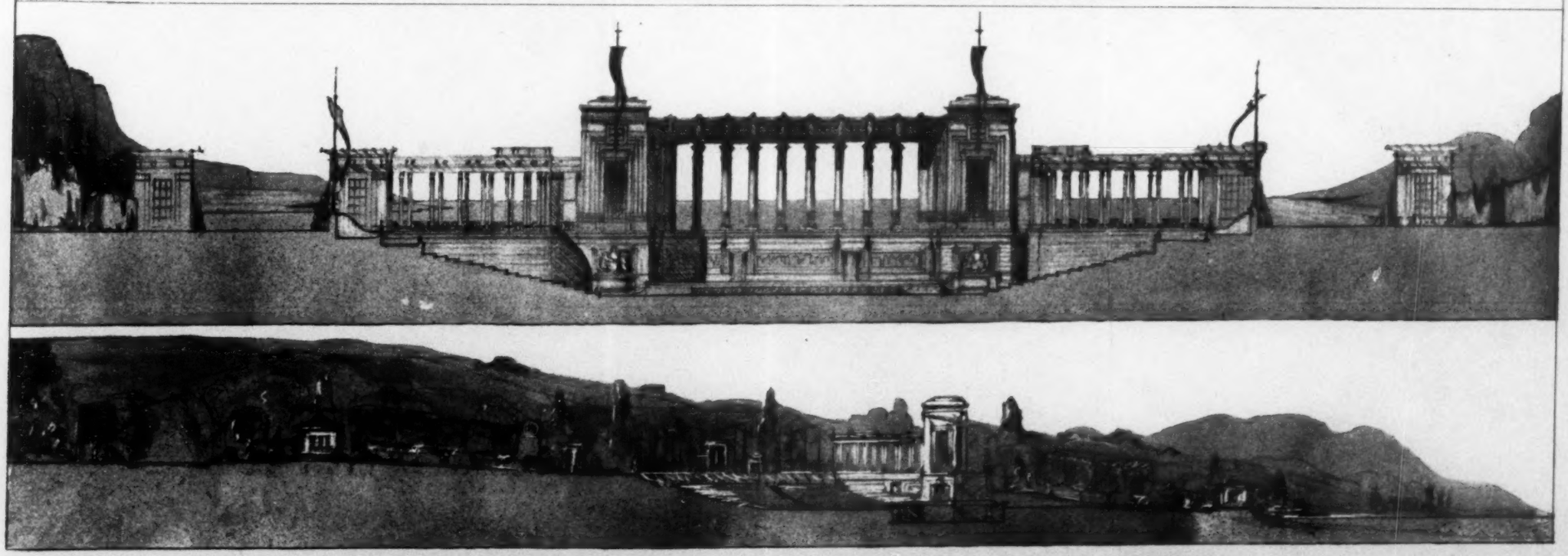


THE COUNCIL CHAMBER OF A CAPITAL CITY





ARCHITECTURAL ASSOCIATION STUDENT'S WORK: FOURTH YEAR DESIGN, BY THE HON. H. A. PAKINGTON.



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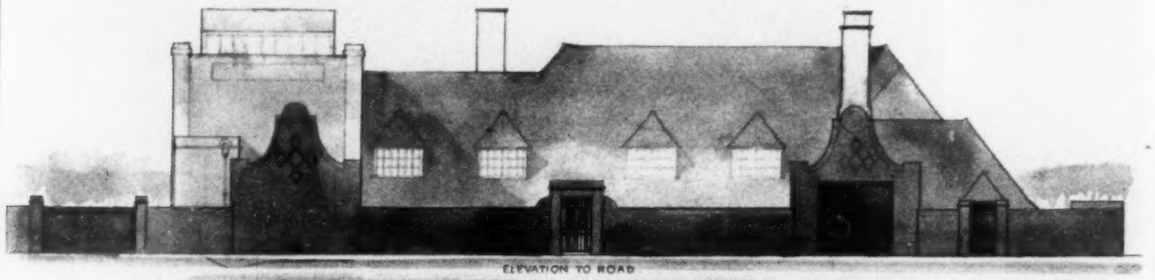
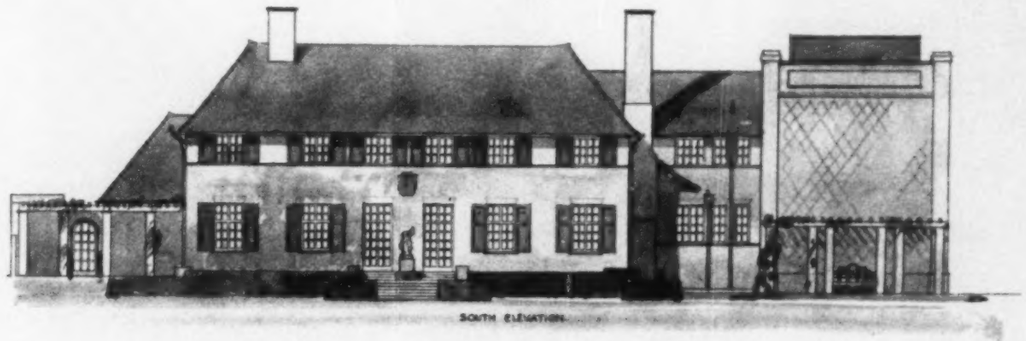
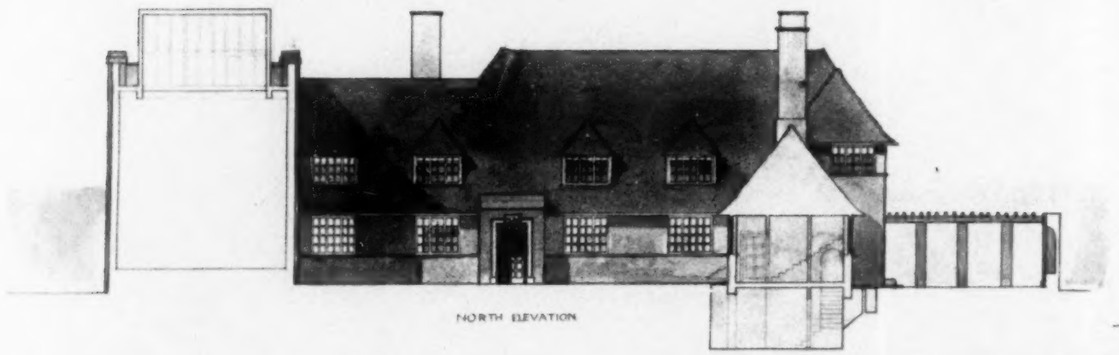


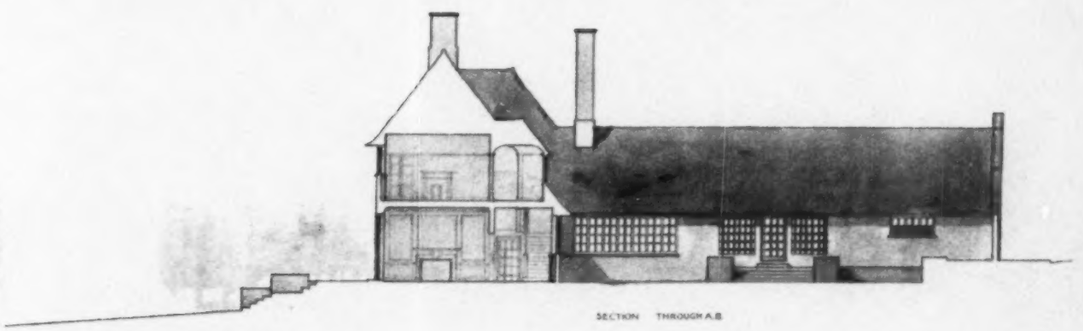
ELEVATION TO ROAD



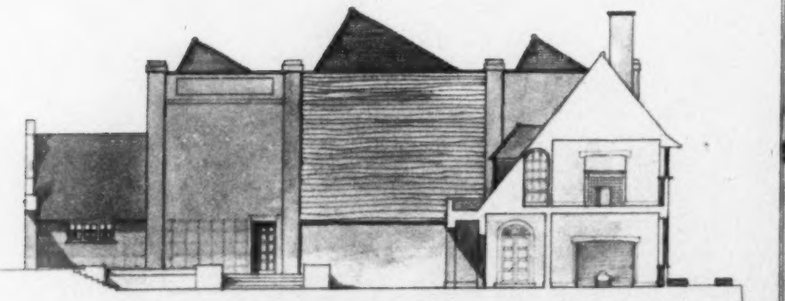
SOUTH ELEVATION



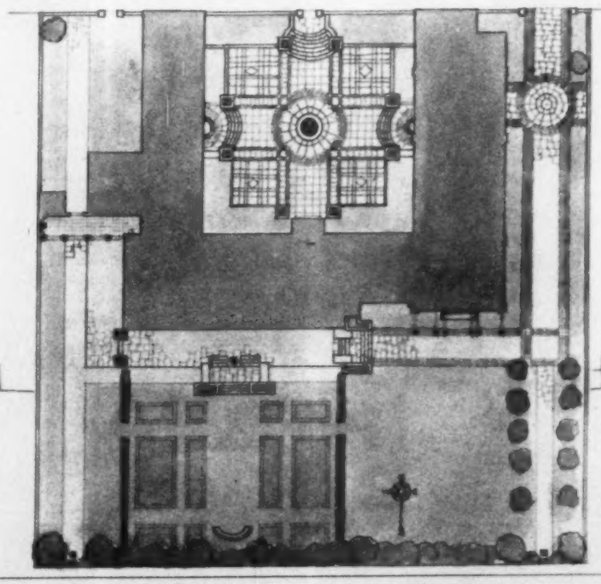
NORTH ELEVATION

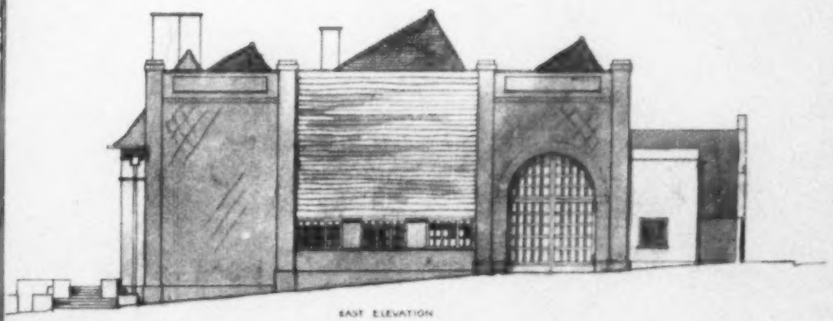


SECTION THROUGH A.B.



SECTION THROUGH C.D.





EAST ELEVATION

SCALE FOR BLOCK PLAN.

FEET

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